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48 £750 PC Group Test

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Windows 10
Microsoft's Next Big Plans

Three months after its launch, Microsoft is about to make a fresh push for Windows 10, but what is it doing? David Crookes takes a look

Last September, things did not look too good for Microsoft. Lagging behind iOS and Android in the mobile phone market, eagerly shouting 'me too' in the tablet space and losing the faith of millions when it came to delivering a decent operating system, it was a case of red faces all around at the Redmond-based company. Then, on the very last day of that month, an announcement was made. The much-hated Windows 8, which had replaced the much-loved Windows 7, was about to be sidelined – and it wasn't even go to be as predictable a move as the introduction of Windows 9. No, this was going to leap forward and be, inexplicably, dubbed Windows 10. Not only that, it was going to be free!

Micro Mart has covered the ins-and-outs of the Windows 10 launch, the reaction, and the things you can do with it. Heck, you've most likely downloaded it (or at least have it in the back of your mind to do, once you're convinced that all of the major bugs have been ironed out). Windows 10 has dominated the agenda of many other outlets and forums and it has preoccupied the thoughts of a good many business users and consumers, each of who have vented their own opinion. And the consensus? Broadly positive as it happens.

Now, Microsoft has reason to be cheerful. The figures certainly make for very good reading: to date, Windows 10 has been installed on 120 million devices and it has an 8% share of the operating system market, according to Netmarketshare. Sure, that's less than Windows XP still enjoys (11.68%) and far smaller a slice than the darling 7, which still dominates with 55.71%. Nevertheless, it is only a whisker behind 8.1, which now accounts for 10.68% of installs.

Cue the popping of champagne corks and hysteria at the gamble having paid off, perhaps. After all, the figures for Windows 10 are far in excess of any version of OS X – and what else matters for Microsoft? Yet Microsoft doesn't seem to be in any mood to rest on its laurels. This time it is ready to push out that boat and sail away triumphantly, leaving all of its past mistakes and the efforts of rivals in its wake. To do that, it has some big plans up its sleeve.

According to Terry Myerson, Microsoft's Windows and Devices executive vice president, this is only the beginning. As adoption rates for Windows 10 show signs of starting to slow, he says that the time is ready for what amounts to phase two of the great roll-out of the new operating system. It will need this refreshed push if it is going to achieve its ambition of one billion devices for Windows 10 in the next two or three years, and it knows it has to act now otherwise it could lose the momentum.

> **"Our aspiration is for customers to choose Windows, to love Windows"**

How? Well, Windows 10 was launched three months ago and by the end of the first month, 75 million PCs had the operating system installed. The ensuing two months only added a further 45 million PCs; if that slowing down trend continues, then can expect around 18 million extra in the next two months. Following that curve further down the line means the the aim for Windows 10 to eventually be on a billion devices is going to fall short, since getting the OS on to as many desktops as possible is going to be crucial for increasing the adoption rates for smartphones, tablets and consoles too.

One choice: Windows 10 is crucial for people deciding to buy machines such as Microsoft Surface instead of rivals
Photo: Mark Von Holden/AP Images for AP Images for Windows

Back to the future: Microsoft was first with tablets, but the iPad made them popular. °Now Windows 10 hopes to grab a slice for Microsoft

Master Plan

So this is what Microsoft is going to do next: it is going to make it easier for people to upgrade to Windows 10 by adopting a system that pretty much guarantees that the OS will end up on your devices. It will put users in a position where they will be encouraged to at least give the operating system a go on the provision that, if the new OS love affair doesn't work out, they can just go back to their old relationship as long as they don't leave it too long before the divorce papers are issued.

Although Myseron says, "our aspiration is for customers to choose Windows, to love Windows," the company is going to change the way the upgrade process is handled. Up until now, the Windows 10 roll-out has worked on the basis of people opting in. It started with a pre-order system which pushed a notification to the task bar letting users know the upgrade was ready. Now, Microsoft says this sort of process is not needed because Windows 10 is out there and it can just be downloaded whenever you decide to get around to it if you haven't done so already.

For those who make a reservation, the upgrade process will begin automatically – although users will be able to decide if they want to continue – but the big changes are coming next. Windows 10 will soon become 'Optional' in Windows Update, so for anyone that is currently running Windows 7 or Windows 8.1 it will sit along Microsoft's regular security patches and tweaks waiting to be installed. However, "early next year" (to quote Meyerson) it will be recategorised as a Recommended Update, meaning Windows 10 will make its way on to a system as a matter of course if the machine's current settings allow for the automatic initiation of updates.

This kind of approach will effectively force the new operating system on to people's machines, but Microsoft is of the belief that people will be happy to continue with it once they have experienced it for a short while. Clearly the company believes that some people have a fear of the unknown and are putting off installing Windows 10 only because they are worried it will mess up their machine or that they will not be able to figure out how to use it. At the same time, this will enable those who don't even know how to upgrade to get Windows 10 on their computers.

As for that market share, well it is surely set to go up, up, up. This kind of strategy may not affect the die hard Windows XP users who have proved to be as unmoveable as a mountain, but it will allow Microsoft to push Windows 7 and 8 users over the hill to what they will contend are far greener fields full of productivity and fun. And as for those pesky non-Genuine Windows 7 and 8.1 users, Microsoft is looking at way to get them on the right track by making it easier to purchase an activation. In all cases, Microsoft is banking on people sticking with Windows 10. They are looking to lead the horses to fresh water and make them drink.

To Upgrade?

What's the point of all this effort? Well, getting people off older systems and on to the very latest OS in the greatest numbers possible is important for Microsoft. No-one at the company wants to continue dealing with people using older systems – it is far easier if most folk are up and running with the most current offering. If there is a security breach, Microsoft will be able to get updates out there much more quickly. There is also a monetary aspect behind Microsoft's passion, though. Windows 10 may be free, but it underpins an ecosystem that could prove extraordinarily lucrative.

There are lessons to be learned here from Apple and the way it used the iPod to revitalise its fortunes. Specifically, it allowed Steve Jobs to negotiate music industry deals and build up the iTunes platform and enabled the company to look at entering into other areas, most notably the phone market with the highly successful and ground-breaking iPhone. The iPad was then a natural progression (even though it didn't seem that way at the time) and it allowed Apple to build and build. At the same time it drove uptake towards Macbooks and iMacs and prompted a good number of people to migrate from Windows to OS X. In other words, Apple built up a new empire of many goodies because people who enjoyed using one Apple product tended to consider using another. Apple's Watch would have nowhere near the userbase it enjoys without this kind of momentum.

> **"Windows 10 has been installed on 120 million devices"**

Microsoft expects that the success of Windows 10 will allow it to do something similar. It feels that its latest OS is better than all of the others it has produced and it is convinced that this is the one system that will allow people to forget the Vista/8.1 horrors of yesteryear and put Microsoft at the forefront again. Much is being pinned on this release and it is going to be vital for the future. If people move to Windows 10 and enjoy it, then they may think more carefully about a Windows Phone compatible handset or they

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For those who find themselves with Windows 10 only to decide they don't like it, Microsoft is offering a way back. Users are being given 31 days to return to their previous version by going to Settings > Update and Security > Recovery and Uninstall Windows 10. In doing so, a full version of the previous OS will be put back on the computer complete with all of the apps and settings.

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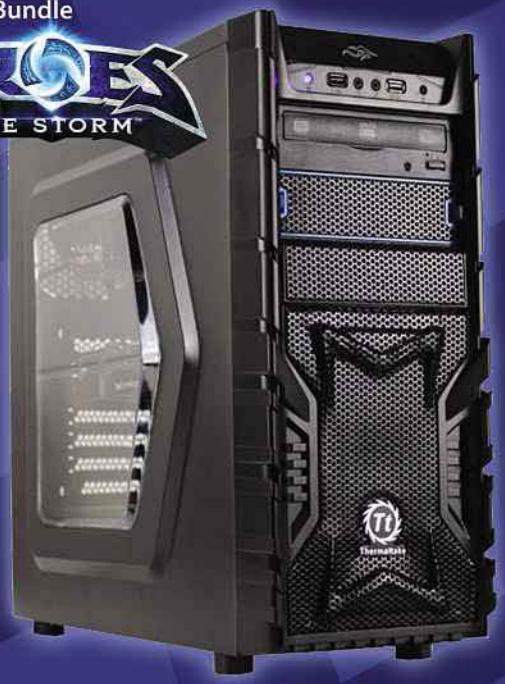

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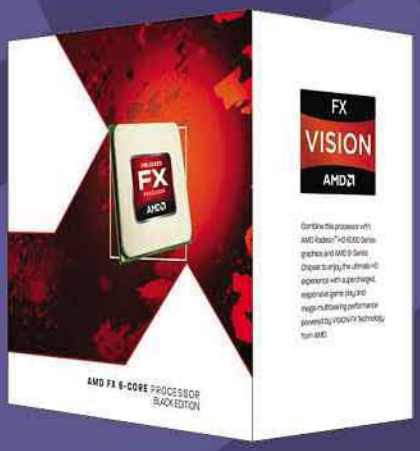

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may choose an Xbox One over a PS4. It may get people to consider a Windows tablet over one with Android or iOS. All of this should hook users into the Windows Store ecosystem and get them to part with their cash.

Install Base

That is why it is crucial that the Windows 10 install base is in a position where it is larger than Windows 7 and broader than Android and iOS/OS X. Microsoft CEO Staya Nadella has been talking with loads of app developers and he wants them to treat Windows in the same way as they treat the Mac Store, App Store and Google Play. He is desperate for them to produce native apps for 10 that will run as well on tablets and phones as on desktops, they are only going to do that if they feel confident the numbers are going to stack up.

As it stands, too few developers are looking to create Windows apps. There are around 400,000 of them for Windows Phone compared to some 1.5 million for the Apple App Store and Google Play. The problem Microsoft also faces is that when a new version of iOS and Android is released it gets people talking. It becomes headline-grabbing news and people comment on them, usually in the manner of the playground squabbles that once surrounded the Spectrum and Commodore 64. The point is that people talk about those OSes but they largely ignore the Windows Phone updates. Microsoft wants Windows 10 to change that too.

Step forward Windows Phone 10, released on November 12th. It has been given an overhaul that is more in-keeping with the desktop experience. Not only does it include far better versions of Outlook Mail, Office, People, Edge and Outlook Calender than previous versions, it is also unafraid of borrowing from other operating systems – but then, when you see the experience of Android and iOS and their sheer success, you can't blame Microsoft for wanting to do this. It is offering cloud back-up and a pulldown on the home screen that delivers more options. This is turning Windows 10 for mobile in an OS that, had it been delivered a few years ago, may well have blown competitors away.

Certainly Windows 10 now brings a lot of its own sparks of genius to the table, things that may well end up being adopted by others in the months to come (rich formatting for emails and map downloads, for example). However, without the volume of apps the others can boast, it will always have a disadvantage. For all of the user interface consistency and the similarities with the desktop, this is the thing that it needs to address.

> **"Some people have a fear of the unknown and are putting off installing Windows 10"**

As such, Microsoft has been pulling out all of the stops in order to encourage developers. There are free training sessions for cross-platform app development and Visual Studio, which gives devs the tools they need to create their apps. The idea is that if a developer produces an application on a Windows 10 phone, it will also work on the Windows 10 desktop. Now Microsoft is taking things one step further again. As part of its big plans for Windows 10 is the drive to promote the apps which third-party developers create. These were laid out in mid-October by Microsoft's Bernardo Zamora.

Windows 10 on mobile is important for Microsoft, as the company attempts to make the OS cross-platform

Big plans and a grand opening: Microsoft will love the buzz that continued to surround Windows 10. Photo: Stuart Ramson/Invision for Microsoft/AP Images

"In June, we launched a feature in Dev Center that allows you to purchase ads to promote your app," he wrote in a blog post. "This feature is one of several options available to promote your app, including Windows Store badges, the Microsoft Affiliate Program, and promotional codes." In addition to that, he says, there will soon be support for 51 new markets, localised text in ad images, reach estimates, recommended settings for campaign targeting, OS targeting and a world map reporting view.

Microsoft knows that getting Windows 10 on as many desktops as possible is just as crucial for its big plan to put the OS on everything you use. That is the biggest promotor of all because Microsoft will not only be able to say, "look at how great this OS is" but it will be able to add, "see those great apps that you like using on the desktop, they're also available on your phone and tablet too". Not for nothing has the Windows Phone Store been scrapped in favour of a universal Windows Store for all Windows-powered devices.

And There's More

As well as trying to get people using Windows 10, Microsoft is also continuing to make improvements to the OS to build confidence. Two preview builds for Windows Insiders have been released that not only fix bugs (including the one which meant the Xbox app consumed gigabyes of memory on a PC when Win32 games were installed and added) but bring some new features to the table. The one which has been catching attention is the update to the Edge web browser which now supports any Miracast and DLNA-enabled device such as Chromecast, Amazon Fire TV Stick or Roku. It allows for the casting of video, picture and audio content.

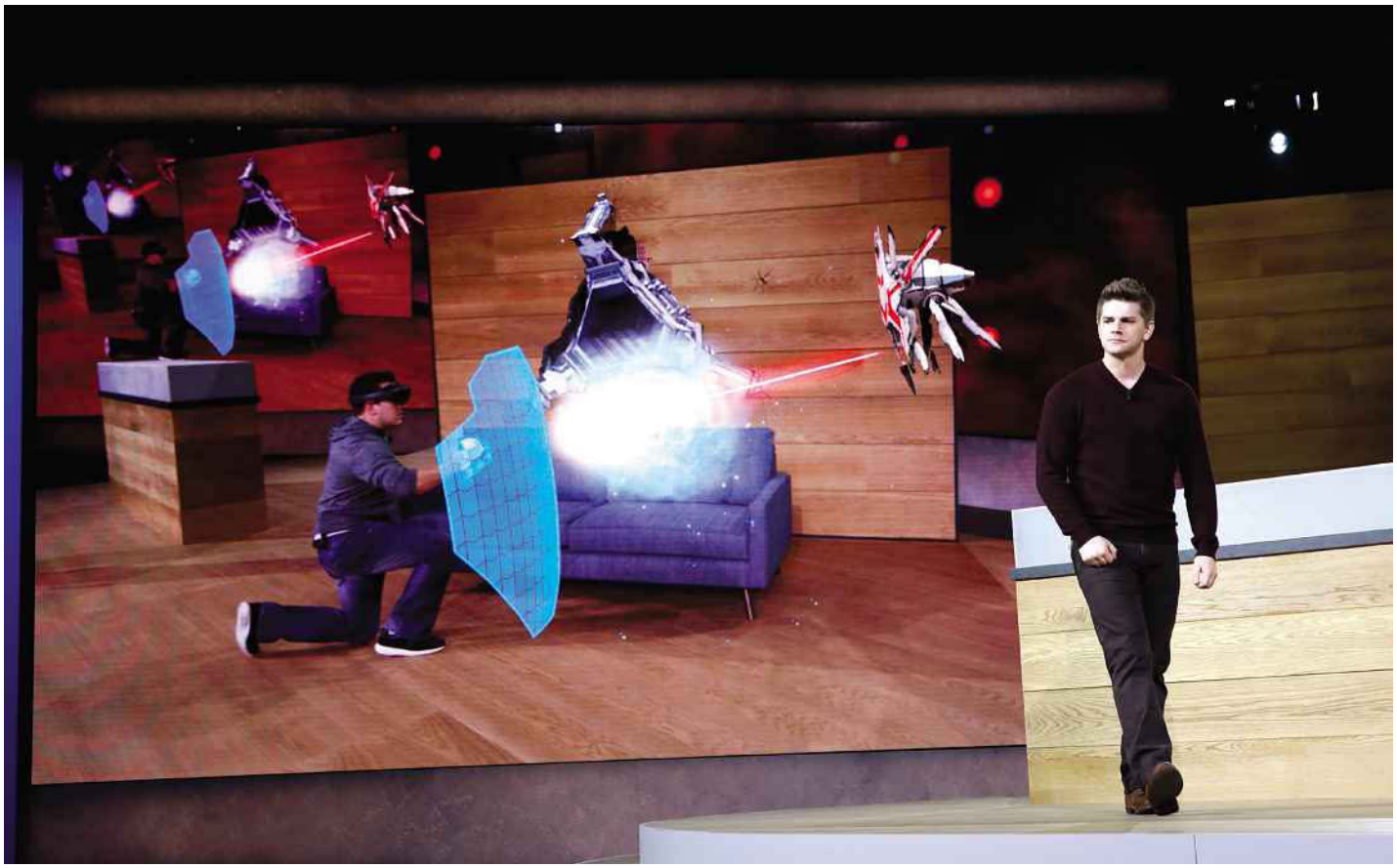
Windows Insider head Gabriel Auin made some suggestions, saying that Edge will be able to cast video from YouTube, photo albums from Facebook and music from Pandora. The only thing it can't do is cast protected content, so there's no way of legitimately casing Netflix or Hulu. This is something that many users will see as a negative but the jumpiness of rights holders makes this kind of thing inevitable.

Other forthcoming plans for Windows include the ability to right click within Microsoft Edge when text is highlighted on a PDF in order to Ask Cortana for information. The Xbox beta app for Windows 10 is also updated to include "the ability to easily find and add Facebook friends who are also on Xbox Live to play, chat, and share clips – a top requested feature," says Auin. "In addition to that new feature, voiceover recording functionality has been added to Game DVR, and the Store in the Xbox beta app will allow you to search for and purchase Xbox One games – including Games with Gold and Deals with Gold promotions, and Xbox One 25-digit codes will be redeemable within the app."

Next year, Edge will also be able to utilise third-party extensions that will enhance the browser's functionality. Microsoft says it is a high priority but a spokesman told The Verge: "We're actively working to develop a secure extension model to make the safest

Play The Game

November 12th has become crucial for another reason beyond the launch of Windows Phone 10. The Windows 10-powered Xbox One Experience will bring a fresh look to the console and, again, extend the number of people using Microsoft's offering. By making Windows 10 appear natural and ubiquitous, it gives the impression of seamless whole. This is why Windows 10 has an Xbox app.



Microsoft hopes Hololens will form an integral part of Windows 10's future. Here, Principal Program Manager at Microsoft, Nick Fajt, shows it off. Photo: Mark Von Holden/AP Images for AP Images for Windows

and most reliable browser for our customers, and look forward to sharing more in a future Windows 10 update in 2016."

As for Windows 10 on mobile, Cortana is going to be able to notify you on your PC if you missed a call and it will let you reply with a text from your PC. It will also let you send texts from a PC by simply typing or speaking "Text" and giving the name of a contact. There will be Skype integration through the Messaging, Phone and Skype video universal Windows apps and a messaging app that supports animated GIFs. There will be a search engine that will extend to searching for contacts from Call History.

Gabe Aul, the Windows 10 Mobile guru, also says Cortana will help keep track of your leisure time, including movie and event reminders, and that it will give you helpful information to know where to go and to get there on time, including an option to book and track an Uber ride directly from Cortana. "With this improvement, you can book an Uber any time you want by saying 'Book an Uber' and Cortana will get you a ride immediately," he notes. "You can even take an Uber to the airport, simply say 'Book an Uber to SeaTac airport,' or any other airport recognized by Bing that allows Uber, and have Cortana book you a ride to Seattle-Tacoma airport, JFK, ATL or wherever your travels take you."

There are also Photos app improvements – "you can now mark local photos on your phone as favorites and have them shuffle on the Live Tile [and] we have also made some viewer improvements for zooming performance and file information", says Aul – and improvements to the storage settings, that will "allow you to install applications to expanded storage such as and SD card or USB drive on BOTH your phone and PC". It certainly seems clear that Windows 10 on mobile is heading in the right direction.

Then, again, it has to be. Microsoft has already called Windows 10 "the last version of Windows", and employee Jerry Nixon says there will be secret updates. The whole ethos has shifted so that Windows is a service, one which will deliver regular improvements and updates. The OS has been built in such a way that it is now compartmentalised, with individual parts able to be updated and changed without effecting the core.

It is why Windows 10 can run across so many platforms, and it's a feature that should enable the OS to evolve. If there are any problems along the way, they will be honed and there will be no need to wait a year for a wholesale change or any point in holding back features longer than necessary just because the company wants to have something major to announce. Indeed, we're going to get the first update, Redstone, in the Summer of 2016 and the second, Threshold, in the Autumn. And who knows, maybe this will be a three-to-four month thing after that or maybe there won't be any set periods at all which would certainly slot in to the service philosophy better.

As for how those updates are likely to arrive, we will see the sort of approach Microsoft is taking with the future roll-out of Windows 10. There will be updates downloaded and automatically updated so that security threats can be headed off quickly and users can take advantage of the latest features and bug fixes. Quite what happens if a computer becomes slow and cumbersome under the weight of future tweaks is a different matter, but one we are sure to see addressed in time.

At this current point in time, though, it's a case of wait and see. In the meantime, there will be experimentation and decisions are set to be more fluid. It's an exciting era for Windows 10 and one that it needs to get right. One thing's for sure, there is a sense that will be no going back this time and no CRTL+Z for mistakes. **mm**

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Saving Money With OEM

If you don't want to spend a mint on new PC parts, there are ways to save money with OEM. Aaron explains

All users of the internet who've spent any amount of time looking online for hardware and software deals should be familiar with the abbreviation OEM. It's a term we see all over the place, from Amazon to eBay. OEM deals are often cheaper than normal offers you'll see, so they're often very attractive.

The problem with OEM is the general lack of understanding many have, with a lot of people not knowing exactly what OEM actually means, both literally and legally. It's easy to see that OEM deals are often much cheaper, but how is this possible? What makes an OEM deal cheaper than a normal option you may find elsewhere or on the high street? Let's have a look.

Money-saving Abbreviation

OEM stands for 'original equipment manufacturer', and as you can guess from the name, it's a special licensing deal that's supplied to specific vendors in the production of systems. These products, which includes both hardware and software, are used to create systems and package deals. However, OEM items are also seen for sale to the general public online, which is where the real money saving comes in.

OEM deals are almost always cheaper than buying the same item in retail form, with the savings often being quite large, even as much as half price. This obviously makes buying OEM items far more attractive to the average buyer, but there are a couple of things you need to know first, with one of these being the limitations of OEM, and another being what makes these offers so cheap in the first place.

OEM deals are basically items that are not intended to be sold separately, and are solely for use in system building or creating specific bundles. You've seen cans of cola that say not to be sold separately on them as they're actually part of a multi-pack, right? Well, it's the same thing, to a degree.

Hardware manufacturers and software developers supply barebones OEM versions of their wares to system builders, and they're used as part of a system bundle or deal. This saves both the vendor and the customer money, but it means that all parties gain. The manufacturers get money for supplying the parts, the vendor makes money on a package that has some good components and hardware, and the buyer saves cash thanks to the inclusion of the OEM items. It's a win win situation.

It didn't take long for people to realise that selling OEM parts could be a big money maker too, and the lower cost of acquiring these meant easy profit. What's more, the reduced cost of the parts meant that the actual sale price to the public could be lower too,

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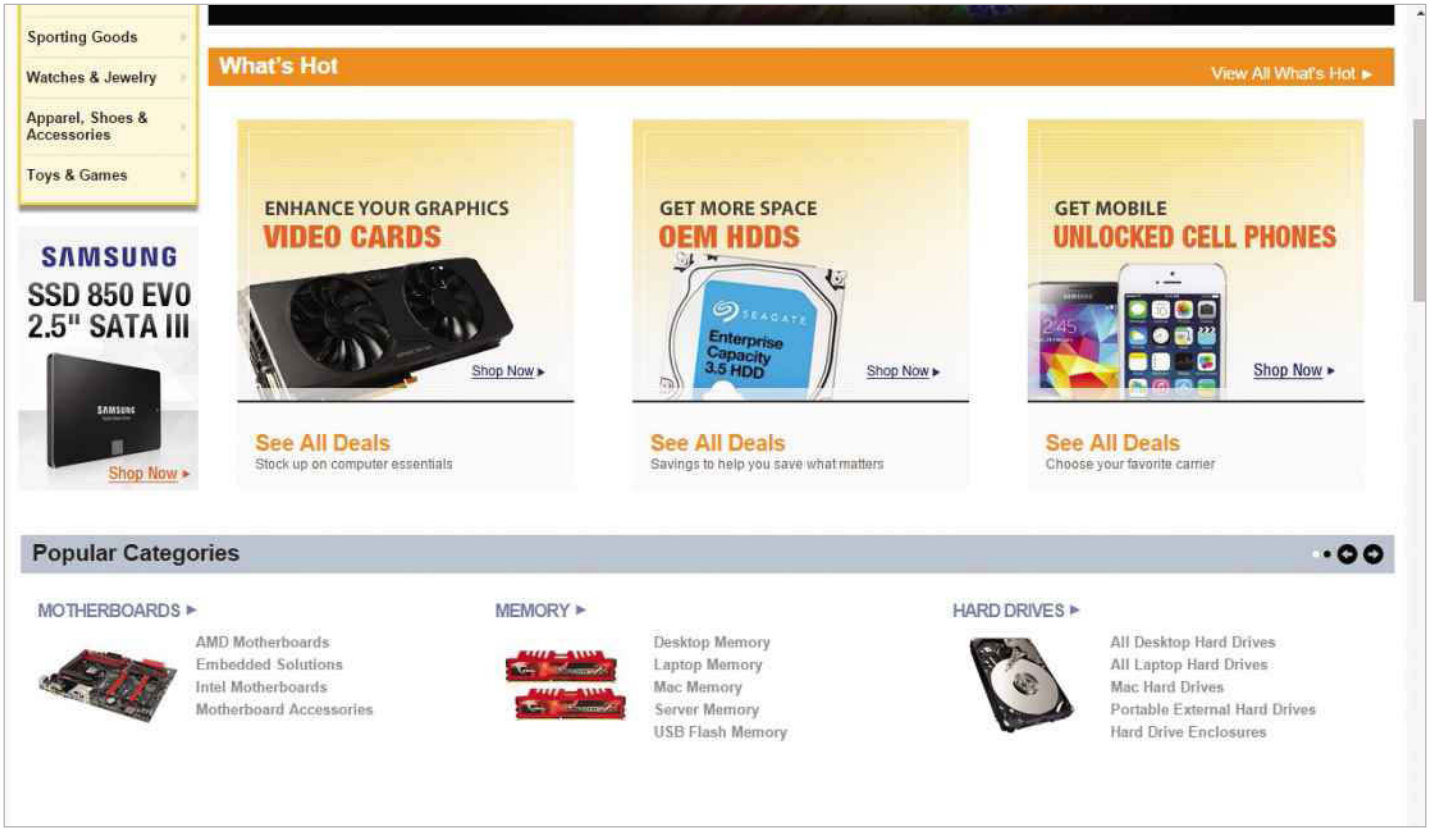
Microsoft has an official OEM partner program that supplies OEM software to system builders



▲ *Websites like Newegg are great places to find OEM deals*

undercutting the more expensive retail versions. So a flood of OEM deals washed over the internet.

Now you can find such deals everywhere, even on sites that usually focus on retail products, such as Amazon, but how much do you actually save, and what's the catch?

Too Good To Be True?

Depending on where you shop, the savings you'll make on OEM deals will vary, but in most cases, it's usually quite a lot. A £200 processor might cost closer to £100, and similar savings could be made on other hardware. You can also save on software, with one of the most common OEM deals being for Windows.

For example, on Amazon, a retail copy of Windows 8.1 Pro will set you back around £150, while an OEM copy of the same OS will only cost around £110. That's a £40 saving, which is nothing to be sniffed at. With so much money to be saved, what's the catch? Is this even legal? Yes, it is legal, but there's a catch too.

Most OEM deals are barebones, in that they come without all of the usual packaging and documentation you'd expect. For software such as Windows, this usually means you'll get the disc in a plastic sleeve with only a product key accompanying it. There'll be no box, manual or anything else. For the most part, this isn't a problem, but for hardware it can be a little more of a concern.

A lot of OEM hardware will also come without any official packaging or documentation. This isn't really a problem for devices like hard disks or graphics cards, but some hardware can cause problems. OEM processors, for example, will often come without an included fan or heatsink. If you don't have one spare or don't buy one to go with it, you'll have a problem. If, for some reason, you have no internet connection, you'll even be in trouble with things like the aforementioned graphics card, as you'll often get no drivers with the component.

On top of this, a common limitation for both OEM software and hardware is the lack of any official support. As the OEM software isn't technically meant to be sold separately, it comes with no warranty other than any you may get from the outlet you buy it from. Usually, OEM components and software are supported by the company that's part of the OEM, such as Dell or HP, for example.

▲ *There's often quite the price difference between retail and OEM copies of Windows*

OEM hardware can be a real money-saver, but it'll come as a barebones package

Because these are not sold by these companies as an official deal, this support isn't available.

This isn't going to be a big problem for users comfortable in their technical ability, able to troubleshoot and support their own kit, but if you're new to computers or simply don't think you have the required knowledge, it may be something to consider, and OEM may save money in the short term. In the long run, however, should anything go wrong, you may end up spending the difference.

Having to buy extra hardware such as a CPU cooler could also add to the overall price, making the OEM deal not quite as impressive. This extends to other hardware, such as graphics cards, which may ship without any of the required cables. Because of this, you should always check what you're getting for your money, and note the overall cost based on the component and any extras you may need to buy in order to actually use it.

> **"You'll also find plenty of OEM deals on auction sites like eBay"**

Also be aware of end-of-line OEM deals. Sometimes vendors will sell hardware that's out of production and no longer available. These OEM deals can occasionally cost more than a retail version or even a new, more powerful model. Buying older, end-of-life OEM stock is useful if you need parts and can't upgrade, but always note down the cost. If you really need an older part, check other potential sources, such as eBay auctions, as you may find them even cheaper than OEM versions.

Where To Buy?

There are many places online that sell OEM hardware and software. As we've already said, one of these places is Amazon, which will please many, as Amazon is a very respectable and dependable site known to all. There are a host of other outlets too, such as **www.ebuyer.com** and specialised vendors like **www.aria.co.uk**. A very popular site for components, including OEM, is **www.newegg.com**. This has a large selection of OEM gear, often at pretty decent prices.

You'll also find plenty of OEM deals on auction sites like eBay, although the nature of eBay means that guarantees and any extended seller support isn't as readily available. Unless you're technically proficient, due to the lack of support for OEM as it is, we'd recommend you stick to retail outlets and avoid public auctions. That said, if you find a great deal and have someone who can help you out if needed, it may be worth a gamble.

Software Limits

Normal retail versions of software, including operating systems, come with licence agreements. This means that a copy of something like Windows can only be installed on one machine at a time, and this machine needs the supplied software key and be registered.

OEM processors can be very cheap compared to their retail counterparts

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...but you'll often have to buy a separate cooler, as most OEM units won't ship with one

OEM software also has licensing requirements, but often this is a lot more restrictive than normal retail copies. Unlike retail copies, which can be moved from one machine to another as you see fit, OEM copies are usually tied to the machine they're first installed on. This is the nature of the OEM software licence, as it's supplied to manufacturers to use in specific bundles or package deals. So if you buy an OEM copy of Windows and install it, it's locked to that system. As Microsoft's official stipulation states, "the OEM software is licensed with the computer system on which it was originally installed and is tied to that original machine. OEM licences are single-use licences that cannot be installed on more than one computer system, even if the original machine is no longer in use."

So you can't simply uninstall it and then reinstall it on another PC, at least not without calling Microsoft support first. The company is known to be quite generous in this regard, and support will often help, so don't be afraid to call and ask. If official permission isn't granted, it'll either be impossible to reuse or at the very least illegal to do so.

"OEM software also has licensing requirements, but often this is a lot more restrictive than normal retail copies"

Big auction sites like eBay are home to plenty of OEM deals. Just be aware of the limitations of OEM support, guarantees and warranties

The same rules often apply to other software, such as anti-virus and office suites. You need to be aware of this, as this can affect how much value the deal will be. If you plan to upgrade your PC in the near future, there's a chance your new OEM copy of Windows will object, because the system has changed. A retail version, however, won't cause the same problem, as the licence you purchase is for permanent use of the software and can be used on any PC, as long as it's not used on more than one PC at a time (unless you buy a multiple system licence).

It should also be noted that OEM software often cannot be returned once opened, so you won't be able to get a refund or replacement. Bear this in mind if you're planning on buying OEM-based gifts for others.

That covers the basics of OEM deals and what you should look for. These offers are a great way to save money, and by shopping for a full set of OEM parts, you can build a powerful PC for a fraction of the price a package deal will cost, as long as you have the know-how. So next time you're shopping for a component or two, look for that OEM deal and save yourself some cash. **mm**

Bargain Windows 10

Windows 10 may be available as a free upgrade for users who already run Windows 7 or above, but if you've yet to upgrade to a compatible OS, there's going to be a price attached to the operating system. You can either buy Windows 10 outright or you can buy a compatible OS and then upgrade for free.

This isn't difficult, and you can easily find copies of older but compatible Windows online. However, the cheapest cost of entry is probably going to be Windows 7. This is because Windows 7 is often the cheaper OS when compared to Windows 8, and if you shop around, you can find much cheaper OEM versions of Windows 7.

Sites like **www.ebuyer.com** have offers for Windows 7 Home Premium OEM for around £65, which is cheaper than both Windows 8 and even the most basic edition of Windows 10. Grabbing this copy of Windows 7 would grant you the free upgrade to Windows 10, in turn saving you some cash.

Stuck With It

Full system builds often include an OEM copy of Windows. Instead of coming with an actual install disc or boxed copy, all you get is the pre-installed OS, with a recovery partition being used for reinstallation purposes. On the PC case or underneath a laptop you'll usually find a COA (Certificate of Authenticity) sticker, which bears the OS licence key.

Many think this key can be reused for another copy of Windows, as long as the PC the OS was installed on originally (the one with the COA sticker) has been formatted. This isn't the case. OEM copies of Windows are tied to the PC, often the motherboard, and cannot be used on another system, so that key isn't valid anywhere else. Only a call to Microsoft can help this. The basic rule: if your licence key is stuck to a system, it can't be transferred.

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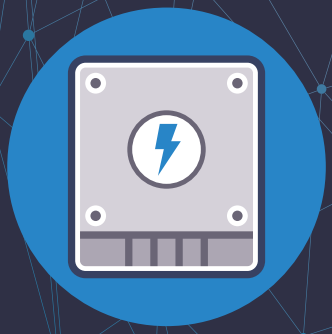

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Digital Dominance

As Microsoft officially kills off Zune, Mark Oakley asks why so many digital music services are failing where Apple and Spotify continue to succeed

You may not have been aware that it was still going, but Microsoft has officially, finally, laid Zune to rest. Yes, the much-maligned music service is ending for good, with official word from Camp Redmond confirming that services will be stopped come November 15th. The fact that this will come as a surprise to many of you – surprising in that you probably thought Zune had already long ceased to be – is testament to just how poorly Microsoft has fared in the digital music service arena for years.

Zune, and I'm being charitable here, was a total failure. After its Zune-branded music players were completely bullied out of the market by the competition, Microsoft's Zune Music service was rebranded as Xbox Music back in 2012, before then being again rebranded Groove this year. The Zune services have, oddly, continued to co-exist until now, but none of them ever captured the public's imagination in the same way some of its rivals managed.

Zune's not alone in its failure, though. There are many digital music services that have been and gone, but where did they go wrong where Apple, Amazon and Spotify have gone right?

Nokia Comes With Music... And DRM

Ah, Nokia. Remember Nokia? The mobile phone brand was once a genuine competitor in the marketplace alongside the likes of HTC and Samsung and, in 2008, it made a play for the digital music market with the launch of Nokia Comes With Music.

The initiative was both intriguing and highly enticing. Buy one of a selection of Nokia mobile handsets and get unlimited music downloads for a whole year; any tracks downloaded were then yours to keep forever. This was clearly a direct attack on the likes of Spotify, with Nokia's all-you-can-listen-to policy attempting to cater for eager audiophiles. Why, then, did the service close just three years after it was launched?

Well, Nokia's initiative was highly prohibitive, with users having to listen to the downloaded music on their Nokia devices or on their PC. One PC, at that. Yes, the service required the user to register a single PC, so the system was doubly limited.

Amazon realised that selling DRM-free MP3 tracks was always going to be a far more palatable proposition for consumers, and even Apple hopped on the DRM-free train in 2009. Nokia's hopes were probably based around the premise that consumers would look past the restrictions as they were being handed access to a catalogue of millions of tracks for free. Unfiortunately for it, they didn't.

According to media reports circulating a year after its launch, UK subscribers were in the low tens of thousands, which wasn't going to be enough to sustain a charge on the industry. It did have a little more success in other countries around the globe but, at the time, a Nokia Music spokesperson said that one of the core issues surrounding the service's failure to launch was that the two (yes just two) devices supporting Nokia Comes With Music were a little out of date themselves.

With Nokia's music service never managing to get off the ground, a few years later Nokia itself would be sold to Microsoft and the brand name would be little more than a footnote in history for western consumers.

How Tidal Got Swept Away

"I'm not a businessman. I'm a business. Man" are the words of Shawn Corey Carter, specifically pat of his lyrical contribution to the Kanye West track *Diamonds From Sierra Leone*. Said Mr. Carter is otherwise known as Jay-Z, one of the most influential men in music. The man's not lying, either. With an estimated net worth of over $500m, according to *Forbes*, Jay-Z is indeed a business in his own right.

He is also quite the businessman, despite his assertion to the contrary. He has worked as an executive producer on video games and has in the past been a part-owner of a basketball team. He's also a major shareholder in Tidal, the music streaming service that he helped to relaunch following his acquisition of the company behind the service, Aspiro. When Tidal was revamped under Jay-Z, it didn't exactly have a soft, quiet launch party.

In March of this year, the press conference to officially relaunch the service brought 16 music artists on stage, including Alicia Keys who spoke a lot about how Tidal was going to change things in the industry. Here's the quote: "So we come together before you on this day, March 30th, 2015, with one voice in unity in the hopes that today will be another one of those moments in time, a moment that will forever change the course of music history."

Grooveshark Gets Licensing Wrong

Once-popular streaming service Grooveshark this year shut down as it learned the hard way the importance of securing all the right licences. Faced with a copyright-infringement settlement, the service closed as it didn't have the requisite licences for the copyrighted music it shared among users. A decade in the game, Grooveshark wrote on its website of the decision to close:

"We started out nearly ten years ago with the goal of helping fans share and discover music. But despite best of intentions, we made very serious mistakes. We failed to secure licenses from rights holders for the vast amount of music on the service. That was wrong."

The issue of licensing and working with music labels is certainly one key reason why many smaller digital services fail to compete against established rivals. If you don't have the breadth of music for consumers to listen to, they will go elsewhere.

Yet, despite all the grandiose statements of the press launch, many were left wondering what exactly Tidal was all about. Jay-Z and his crew of artists were keen to point out that Tidal was about supporting the artist and making consumers understand the importance of paying for their music. While most good, honest people weren't going to argue against the notion of a fair days pay for a fair day's work, the argument gave them little reason to sign up. Simply put: what's in it for us, Jay?

This, bluntly, has been Tidal's problem. It's all well and good providing a service that benefits the artist. PledgeMusic and Kickstarter have proven how effective fan engagement can be with entire projects funded via these sites. The key with those crowdfunding services, however, is that consumers are typically rewarded in some way – an early release, a credit on an album sleeve, a mention in a song.

"The argument gave them little reason to sign up. Simply put: what's in it for us, Jay?"

Tidal, on the other hand, has little to entice consumers, not least because of the lack of any free tier payment plan for consumers to sign up for and see what all the fuss is about. It does offer a higher-priced service for better quality audio, but consumers can make that choice for themselves by purchasing CDs or vinyl. In refusing to offer a free option, Tidal has found itself behind the 8-ball when competing with well-established, popular streaming platforms like Spotify and Pandora. Ad-supported free streaming offers consumers the chance to discover new artists, artists they can then potentially support financially by attending their concerts and buying their back catalogues. Tidal's approach doesn't allow for that.

Unfortunately for Jay-Z, the initial launch was misjudged (certainly to a UK audience), the pricing strategy all wrong (the premium £20 a month charge for higher quality audio has limited appeal among a limited audience group) and it's up against established competition. Tidal isn't making waves. It's just crashing on the rocks.

Where Microsoft Got It Wrong

Microsoft has rebranded its digital music service twice since laying Zune hardware to rest. Xbox Music then became Groove earlier this year but the problems regarding consumer take-up of the service remain the same.

Microsoft, perhaps unwisely, stopped free streaming on its platform in 2014, focusing instead on making "Xbox Music to deliver the ultimate music purchase and subscription service experience for our customers". By monetising the service and forcing consumers to subscribe if they wanted to continue, Microsoft backed itself into a corner and put itself up directly against established, free competition.

While it made sense for Windows Phone users to climb aboard, there was little incentive for anyone else to bother. Have you ever seen audio partners mentioning Xbox Music or Groove on their packaging? Where Apple has AirPlay speakers to support it – if you happen to have lots of money at your disposal – and Spotify had the Sonos music system as a backer, who was backing Microsoft?

And now there's Groove. The rebrand was obvious enough – Xbox Music implied that it was an Xbox-linked service alone – but what is it actually offering over the competition? Very little, truth be told. Again, beyond Microsoft Phone users there is little here to encourage people to jump on board. A shame for such a major company.

Competitive Advantage

In any industry the concept of gaining a competitive advantage over your rivals is crucial if you're going to make your mark. In the case of digital music services, there are a few key factors that have helped iTunes, Spotify, Amazon and Google Play move ahead of the rest. This isn't to say that they are better than other services out there, but they have become the most popular for a few primary reasons.

Perhaps the most important reason falls down to music licensing. Spotify has become the key player in music streaming because of its deals with all of the major music labels. This results in over 30 million songs being available to its users, a figure that's difficult for other streaming services to keep up with. There are other, higher-quality services in competition, but Spotify's catalogue is a winning factor in its success story. That breadth of choice also underpins the loyalty that consumers show to iTunes and Amazon – don't just cover the major artists; show some love for the little guy.

Their success has also been based on regular re-assessment of their UIs, providing enhanced social interaction and a commitment to ease of use that consumers have responded to. Furthermore, in the case of Amazon, iTunes and Google Play, all provide free music or cut-price "deals" that have helped to boost sales and keep consumers interested. For Spotify, despite some missteps along the way, its tiered pricing system has hit a sweet spot between lower-quality, ad-supported listening and higher-quality audio streaming for a price. Mobile interaction has also proven a winner for the industry leaders. Well-written apps are crucial in this respect.

Finally, and perhaps most crucially, the guys leading the field are established market players. Having built up an audience, they have managed to successfully stay ahead of rivals by simply being the biggest fish in the fishbowl; iTunes, Amazon and Spotify managed that by diving in early and keeping their wits about them, as is often the way of things. The fittest will thrive, as it was in the retail space where the likes of HMV, Our Price and Virgin eventually grew to dominate independent music retailers. Digital downloads, and then streaming, changed the music retail landscape, of course, and the most successful digital music services seized the opportunity to provide ecosystems with their own hardware or via savvy partnerrships. **mm**

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The Easy Guide To Flashing An Android Phone

Part 1: Stock ROMs

For many Android users, the process of flashing a new ROM – a phone's firmware or operating system – seems shrouded in mystery. But it's actually a doddle. Jason d'Allison shows you how...

In this two-part guide (Windows-only, sadly), I'm going to explain how to flash an Android phone with a new ROM. This week, it's the turn of stock ROMs, ones provided by a phone's manufacturer or network provider. Next week, I'll venture on to custom ROMs, ones developed by enthusiasts to give improved functionality.

For both parts, I'm using a Samsung Galaxy Note (GT-N7000). Firstly, I've got one to hand, and secondly, there's a solid chance a Samsung is what you're holding, as the South Korean colossus sells more Android phones than all the other players combined. The flashing process is largely the same across the whole model range. Unfortunately, it's often somewhat different with other Android brands, but this guide can still serve as a useful foundation.

But why flash a stock ROM in the first place? Why not just install the regular OTA updates (over-the-air) or use Samsung's Kies software? Well, you should always do that if possible, but if your phone is rooted or tweaked or running a custom ROM (perhaps it's second-hand and came that way), both of those routes will likely be blocked. Manual flashing could be your only get-out – crucial if you need to make the phone 'official' again for a warranty claim.

Read Me First!

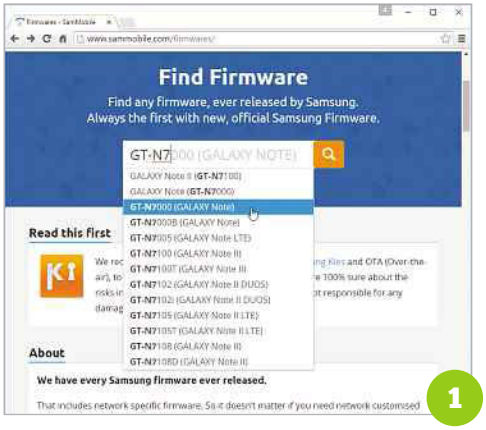
Before you start, ensure you've backed up everything of value. Ordinarily, you won't lose the content of a micro-SD card, nor any files stored internally in the phone's default media locations, but it's wise to proceed as though you could lose the lot.

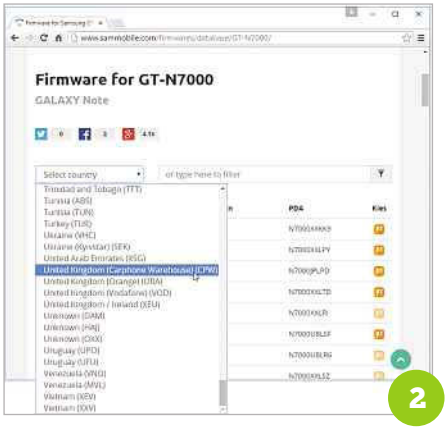
Apps you've installed via the Play store, and often their settings, will normally have been backed up automatically to Google's servers. You'll be able to restore these as soon as you log into your Google account in the new ROM. The same applies to Gmail messages and call contacts. Take a look at **goo.gl/LU5IrM** if you're unsure how all this works.

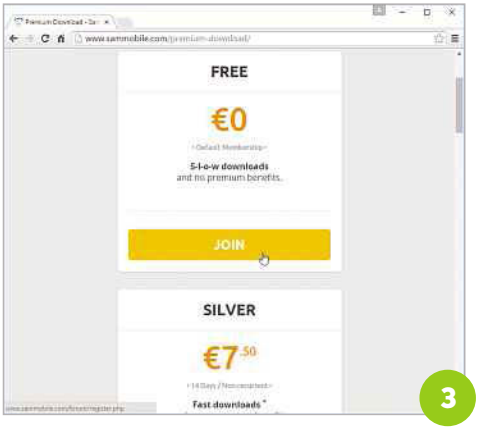
To save text messages, a good bet is SMS Backup & Restore, a free app in the Play store. And to save media files, simply hook your phone up to a PC via USB and copy them across. You could also use Samsung's Kies (**goo.gl/Zl0gqv**) – or the company's new Smart Switch (**goo.gl/2UwU1w**) – but as mentioned before, this will typically only play ball if your Android installation is totally Samsung-stock.

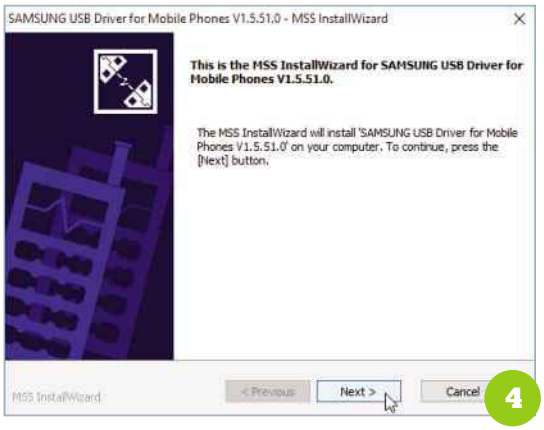
Now, there's an app that'll do all the above at one fell swoop: Titanium Backup. This is also in the Play store. One snag is that some

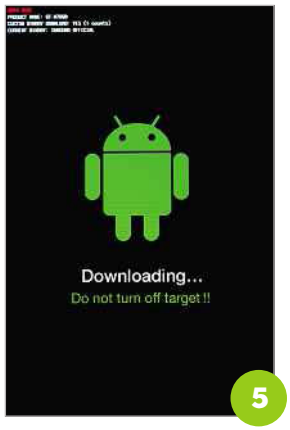
Kies is a ghastly piece of software, and it might refuse to acknowledge your phone even exists, but you'd do well to give it a chance

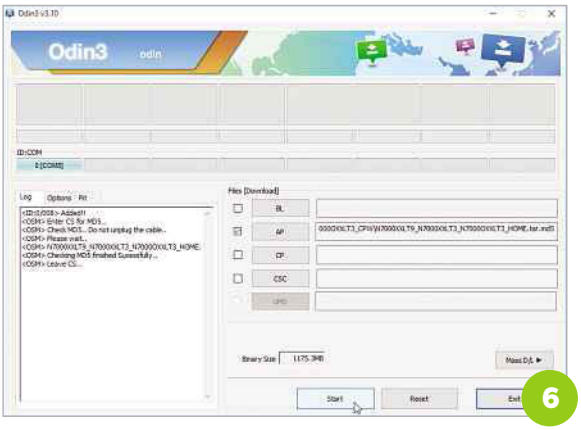












features – including text-message backup, sadly – are only available in the paid version, currently costing £4.11. Another snag is that your phone needs to be rooted, a concept I'll explain next week.

Step 1

First, choose your ROM. The best place for Samsung ROMs is probably **www.sammobile.com/firmwares** (alternatively, try **samsung-updates.com/latest-firmware**). Use the search bar to find your phone model – the *exact* model – then hit the magnifying glass. A long list of ROMs will appear. Obviously, you're only interested in the ones offering the latest Android version your model supports.

Step 2

Every Samsung ROM has a CSC (carrier sales code) that defines its intended region and network. Common UK CSCs are BTU (unlocked), CPW (unlocked), H3G (3), O2U (O2), ORA (Orange/EE), OXA (unlocked), TMU (T-Mobile/EE), TSC (Tesco), VIR (Virgin), VOD (Vodafone), and XEU (unlocked). Use the 'Select country' menu to home in on the UK ROMs, and for help on which CSC to go for, see Network Notwork.

Step 3

To get hold of your ROM, you'll need to register. The site will try to persuade you to get out your wallet, but keep it in your pocket. Take the free option. The catch is that the download speed will be capped. Badly. The Android 4.1.2 CPW ROM for my Note weighs 788MB, so in theory it should have romped down my 76Mbps fibre pipe in under 90 seconds. It took an hour. Go and get your hair cut or something.

Step 4

Next, equip your PC with Samsung's USB driver. This comes with Kies, but if that's not set up (perhaps it doesn't like your phone), install this stand-alone job: **goo.gl/GTqyGn**. Also, you need to install Odin, the

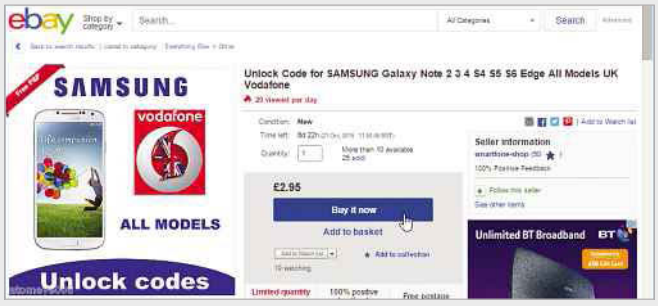
Network Notwork

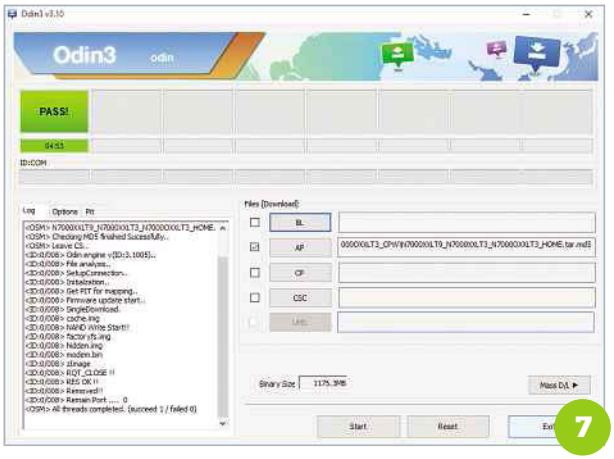
If your phone is locked to, say, Vodafone, you'll normally be fine using a ROM with, say, an O2 CSC. One reason for doing this is if Samsung has made an update available but your own network hasn't yet released it. If you run into boot difficulties, panic not. Just try again with a different ROM.

The downside of fudging the CSC is that you'll end up with the wrong network-specific apps and branding. True, such things can be removed by rooting, but that's a subject for part two of this guide. Most of the time you'll want a ROM with an unlocked CSC, with no network-specific apps and branding at all.

However, flashing an unlocked ROM to a locked phone will *not* remove the lock. Sorry! Likewise, if you flash a ROM with an O2 CSC to a phone locked to Vodafone – to use the above example again – you won't magically be able to use an O2 SIM. A phone's network eligibility is linked to its IMEI and held on an external database.

▼ Bad news if you're hoping a new ROM will circumvent a network lock: you'll still have to buy an unlock code





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actual flash tool. Grab the latest version, which is currently v3.10.6: **odindownloader.com**. The ROM, driver and Odin downloads will be zip files, so be sure to unzip them. You're then ready to rumble!

Step 5
Make sure your phone has enough juice or plug it into the charger. The flash process should take about five minutes. First, get the phone into download mode: switch it off, then switch it back on by simultaneously pressing the volume-down, home and power buttons. It can be tricky to get this right, but when you do, a warning screen will appear. Pay it no heed; press the volume-up button to continue.

Step 6
Next, connect the phone to your PC via USB, then launch Odin. The first ID:COM box should turn blue and display a number. Click the AP button (labelled PDA on older versions) and open your ROM file. Don't panic if Odin freezes up and shows 'Not Responding' – just wait. Leave the settings alone – only Auto Reboot and F. Reset Time should be ticked (these are hidden under the Options tab on recent versions).

Step 7
Now click Start. This is when the magic happens! You'll see progress bars – blue on the phone and green in Odin. Wait while Odin works through the following stages (they may differ slightly in your case): CACHE, FACTORYFS, HIDDEN, MODEM, KERNEL, RESET! and PASS! The phone will then reboot, and you can unplug the USB cable now and close down Odin. Andy the Android should have a blue spinning thing in his tummy.

Step 8
After a while, the phone will reboot again. If it gets stuck at this stage, start worrying! No – I'm joking! A freeze-up here is more or less normal. The answer is to put the phone in recovery mode: switch it off, then switch it back on by simultaneously pressing the volume-up, home and power buttons – volume-up this time, not volume-down. You'll be greeted with a text menu, possibly with a red error message near the bottom.

Step 9
Use the volume buttons to move up and down the menu options and use the power button to make a selection. First, select 'wipe data/factory reset'. On the next screen, select 'Yes – delete all user data'. It all sounds rather ominous, I know. Before long, though, your phone will reboot to the recovery menu again. This time, select 'reboot system now'. Once that's done, so are you. Success! Your phone will be factory fresh. **mm**

Security Alert

Beware! Most Samsung phones running stock Android 4.4.x or later – or 4.3.x in some cases – have the Knox feature. This provides two separate Android environments: standard and secure. In the secure environment, only certain apps are available, and there's no Play store. Also, nothing created in one environment is visible in the other. The idea is that the same phone can be used for both home and work.

Knox relies on a security flag, which can be either 0x0, for untripped, or 0x1, for tripped. Do pretty much anything unofficial and the flag will trip. The process covered by this guide will trip it, as will rooting (usually). Under Knox, the only 'safe' ways to modify or change a ROM are to install an OTA update or use Kies.

On a phone with a 0x1 flag, Knox becomes disabled. At least in the US too, the phone's warranty becomes void. In most instances, Knox can never be used again, as normally the flag can't be reset. Indeed, there's often an e-fuse in the SoC – the system-on-a-chip – that gets physically 'blown'.

If you've no interest in Knox and if your phone's warranty has already expired, the security flag needn't be a concern. Even when tripped, it won't limit what you can and can't do except as noted above. For more information, head to **goo.gl/JoAdF5**. And again – beware!

▼ Before doing anything unofficial with a Samsung phone, make sure you've boned up on Knox

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Remembering... Xbox

This week we look at a console that has a special place in our hearts and under our TVs

The late 90s saw the launch of the sixth generation of games consoles, far more advanced than anything before.

The previous generation with its Dreamcast, PlayStation, Nintendo 64 and so on was already a quantum leap forward in terms of what the home gamer could enjoy on their TVs. However, this sixth generation stuff was about to knock the ball out of the park, so to speak.

The original Xbox console was released in November 2001, about a year after Sony launched the PlayStation 2. It was a bold move, since the PS2 was already firmly established in homes around the world, and gamers had already become accustomed to Sony's previous generation.

In all honesty, and we're talking from our own point of view here, the original Xbox was a pretty ugly looking unit. Compared to the PS2 or even the Nintendo GameCube, the odd-shaped, chunky looking console was difficult to love at first. But once you powered it up, increased the volume on the TV to drown out the noise of the internal fans and unravelled the unfeasibly but very usefully long cable attached to the controller, you had a decent console under your TV.

Its History

The history of the Xbox started in March 1999. Sony had already teased the media and gaming public with the soon-to-be launched PS2, with its enhanced 3D visuals, DVD playback and advanced processing prowess.

Kevin Bachus, Otto Berkes, Ted Hase and Seamus Blackley were working on various projects at Microsoft, and between them, toying with the idea of building a console that could compete with this new generation of powerhouse processing.

They formed the idea and sent it skyward to those who hold the purse strings for such things, but according to internet lore, Bill Gates didn't think it was a worthwhile idea. Nevertheless, he asked the team to pitch their idea directly to him. By the end of the presentation, Bill had changed his mind and the Xbox was finally born.

The concept of the Xbox was startlingly different to what was already and what had previously been available. In Microsoft's view, consoles lacked the creativity that a modern gaming PC could offer, so why not make the Microsoft console more like a PC than the current generation of consoles.

Due to DirectX having a history with games developers, the new console team basically stuffed the guts of a higher-end gaming PC into a large plastic box and based the in-house OS on the Windows 2000 kernel. That way the developers of the time could code away using familiar routines for a PC and a console version of a particular game.

As it happens, it was a good idea, and the DirectX Box project had a new name: the Xbox.

Did You Know?

- Dwayne 'The Rock' Johnson was one of the first owners of an original Xbox.
- The first console to feature a hard drive.
- Over eight million copies of *Halo 2* were sold.
- There were two models of controller made: a standard version, which was designed for bigger hands, and an S-version, for smaller hands (apparently, for the Japanese market).

The original Xbox lasted four years, until Microsoft released the upgraded Xbox 360 in November 2005. This resulted in games severs for the original Xbox shutting down while developers migrated their skills to the new console.

The Good

Remarkably powerful. Basically just a high-end PC. Great gaming and even better modding later in life. XBMC!

The Bad

Fairly poor laser. The fans often packed up. DVD issues with earlier models.

Conclusion

While Microsoft has often missed its mark on several projects, it managed to hit the proverbial nail on the head with the original Xbox. So much so, that you can still find them in good working order on eBay.

The original Xbox, a monster of a console but quite remarkable really

Keeping the fans clean was a headache, but it kept the console alive

Component Watch

Why have wires, if you don't need to? Get a deal on one of these Bluetooth wonders!

Bluetooth speakers come in all shapes and sizes, from small and compact to large and powerful. But what if you're not sure which is best? And what deals can you get on them? In this week's Component Watch, we're scouting around for the best deals on wireless speakers across the entire market – big and small, premium and budget, powerful and discreet. If you can't find something close to what you want on this list, it probably doesn't exist.

Deal 1: Veho 360 M4
RRP: £59.99 / Deal Price: £22.99

The Veho 360 M4 is a small, portable speaker unit with dual 2.2W drivers and a USB-rechargeable battery that offers six hours of playback. A 3.5mm jack input allows you to connect non-Bluetooth devices, though the best feature is the built-in micro-SD slot, which effectively turns it into a stand-alone stereo. Perfect for taking your music with you wherever you go, especially when the price has been knocked down this much.
Where to get it: Zavvi – bit.ly/1l9jFws

Deal 2: Creative Airwave HD
RRP: £99.99 / Deal Price: £25.92

An upgrade of the earlier Creative Airwave model, the Creative Airwave HD features Bluetooth pairing and one-touch NFC, allowing you to establish connections in seconds from any compatible device. A compact size and rechargeable battery allow you to take your speaker with you, and Creative Multipoint means you can connect two devices at the same time, so there's no need to reconnect if you use more than one device! It's a little old now, but that means it's being sold off super-cheap, and this green one is £5 less than most!
Where to get it: AWD-IT – bit.ly/1kw6G7s

Deal 3: Sony SRS-X33R
RRP: £129.99 / Deal Price: £99.99

Sony describes this speaker as providing "elegant, portable sound", but all we know is that with 20W output, dual passive bass radiators and NFC connectivity, it's a device that can't help but impress. A seven-hour battery life and portable design allow you to take your music anywhere, while connectivity with the Sony Entertainment Network allows you to stream content out of the box. It even comes with a built-in microphone to allow hands-free calling. Available in various colours, but this red one seems to be the one going cheap.
Where to get it: Currys – bit.ly/1HbXAXD

Deal 4: Bose Soundlink Mini Series II
RRP: £190.00 / Deal Price: £149.00

Developed by the sound experts at Bose, the SoundLink Mini Speaker II is a portable but high-quality soundbar with a ten-hour rechargeable battery, built-in speakerphone and voice-prompts to help you pair it up. USB and audio jack ports complement the wireless connectivity, which has a nine-metre range and eight-device memory. You have to pay quite a lot for it, but for a change there's no trade-off between quality and portability!
Where to get it: PRC Direct – bit.ly/1kcKzU3

Deal 5: Soundfreaq SFQ-06I
RRP: £199.99 / Deal Price: £149.99

The Soundfreaq SFQ-06i is a Bluetooth compatible room speaker featuring a universal device mount for phones and MP3 players with USB-cable management or a standard line-in port for devices too large to go on top. A remote control app is available on some platforms, so you can control the output from your phone or tablet. You can even buy two and use the proprietary Dual Streaming System to set them up in stereo! Absolutely tons of features worth going for.
Where to get it: Argos – bit.ly/1MKQfva

NEWS AND VIEWS

Vodafone Customers Latest Fraud Victims

Sigh…

League of Legends Tournament Champs Crowned

And the winners are…

Congratulations to South Korean team SKT for it was they who were named as the 2015 world champions for this year's *League of Legends* tournament.

The team members have done rather well for themselves, winning a prize pool of $1m to split between them, and it was an all South Korean affair in the final as SKT beat Koo Tigers to claim their prize. The final of the tournament took place in Berlin in front of 15,000 fans, and the final was won 3-1. In fairness to Koo Tigers, it was the first team to take a single game against the eventual champions, so it wasn't a bad effort.

Cockiness abound from an SKT player who was interviewed after the event, though: "We noticed that Koo didn't really change that much over the past year, and we thought that it would be the same this time around, and it was."

There is such a thing as winning gracefully, you know, chaps.

In other e-sports news, professional *League of Legends* team Team Dignitas has been sold for around $1m, which really goes to show what a big deal e-sports has become.

QUICK BITS… The number of voice over LTE connections is predicted to reach two billion by 2020, according to

Just as the UK was left reeling from the TalkTalk hack, one of the country's major mobile networks has been hacked.

More than 1,800 Vodafone customers are said to have been left possibly open to fraud as their personal details were accessed by cyber-criminals. This wasn't a system problem this time around, though, as the details were reportedly obtained from an "unknown" source, and names and possibly bank details were likely obtained in the hack. According to the company, a "handful" of customers were actually affected by any fraudulent attempts to access data because of actions the firm took at the time to put a clamp on things, but the bottom line is that this is yet another high-profile hack attack to reach the pages of national media.

Are the hackers winning the battle?

Ever since, I bought my first Android phone, an HTC Desire, I've been rooting my devices and installing custom ROMs. In fact, I've never owned an Android product that I didn't root – and on many occasions I've done it as soon as got the thing home.

Why? Well, partly because I like many of the root-only apps or ones that are enhanced by this level of access, such as Titanium Backup. Also, I like having the ability to install a custom recovery, so I can create backups of my entire phone or tablet's OS, apps and files.

But mainly, I think, I do it because I can and because it's fun. Even though it's others who do the hard work, creating the tools to unlock this operating system and creating personalised versions of it, you still get a sense of achievement from following their advice.

Naturally, I wouldn't ever tell anyone to root their Android devices, though, because safe as it generally is, there's always a chance it could go wrong.

For me, though, that's a chance I'm willing to take. Are you? Write in and let us know.

Anthony

Editor

Golden Joysticks Awards Announced

The Witcher 3 did rather well

And so the 33rd year of the Golden Joystick awards has been and gone. and it's *The Witcher 3: Wild Hunt* that everyone was talking about. Quite right too, seeing as the game bagged no fewer than five awards.

Here is the full list of accolades that came its way: Ultimate Game of the Year, Best Storytelling, Best Visual Design, Best Gaming Moment and Studio of the Year for the CD Projekt RED studio. The Golden Joystick Awards are important for game studios, as they're voted for exclusively by gamers themselves, so the perception is that these have more credibility than industry awards. While *The Witcher 3* certainly stood out of the crowd, *Grand Theft Auto 5* did alright for itself with four awards, including Best Innovation of the Year for bringing first-person mode to the title, and the Lifetime Achievement prize went to the late Nintendo CEO Satoru Iwata.

On the other end of the spectrum, YouTube's PewDiePie was handed the Gaming Personality Award – he has 40 million subscribers.

Meanwhile... On The Internet...

In last week's column we featured the new Tor messenger (**tinyurl.com/MMnet87m**), which hopes to provide an easy-to-use, truly 'off the record' instant messenger service. By way of contast, last week itself began with a whole host of rumours stating that the new UK Investigatory Powers Bill[1] would seek to outlaw end-to-end encryption, or at least a company's ability to provide it to customers without having the facility to decrypt the messages when presented with a warrant to do so (**tinyurl.com/MMnet88b**).

The rumour started with a story in *The Telegraph* (**tinyurl.com/MMnet88c**) that quoted an unnamed "Home Office spokesman" as saying authorities need to ensure "that companies themselves can access the content of communications on their networks when presented with a warrant, as many of them already do for their own business purposes, for example to target advertising." However, it seems that reporter Tom Whitehead made a leap to far in construing that as an intention to ban end-to-end encryption altogether, because when the plans for the bill did arrive two days later, there was nothing of the sort included (**tinyurl.com/MMnet88d**).

Far be it from us to seem cynical, but it did occur to us that running such a story on a Monday may, come Wednesday, make the actual plans[2] seem almost tame by comparison. Especially when they're accompanied by concessions to judicial oversight (**tinyurl.com/MMnet88g)** and claim to restrict some activities in the future.

However, some have even questioned whether such powers were ever actually required at all, given the data that agencies of the state already have access to (**tinyurl.com/MMnet88h**). Chief among these critics was none other than Edward Snowden, who summed it up in one tweet: "'It's only communications data' = 'It's only a comprehensive record of your private activities.' It's the activity log of your life" (**tinyurl.com/MMnet88i**). He then went on to add that the IPB would make the UK "the most intrusive and least accountable surveillance regime in the West" (**tinyurl.com/MMnet88j**). However, perhaps the most damning indictment of the plan came from *Financial Times* writer David Allen Green (aka blogger **@jackofkent**) who, among other things, pointed out that "The government will then have a solid legal basis for far more intrusion than it has now; it will be able to get what it wants when it wants about all your electronic communications, and so too will anyone else who gets access to this data" (**tinyurl.com/MMnet88k**). Worried? Well, even if you're not, maybe you should be... If Tor sold shares, they'd surely be on the rise right now.

YouTube, and online video in general, is the perfect home for the so-called 'supercut', and this is one of the best we've seen in a while. So while we're talking about spies, courtesy of the Burger Fiction channel, we present what claims to be a complete run through every gadget ever used by James Bond. Though we've spent more than a few evenings and Sunday afternoons watching our way through his adventures, we're in no position to dispute that claim, and whatever, it's well worth 16 minutes of your time... Unless there's only 15½ minutes left on that bomb you need to diffuse – in which case you should get on with that (**tinyurl.com/MMnet88l**).

It's well-known fact that, certainly in the world of telecommunications, 'unlimited' (**tinyurl.com/MMnet88m**) very rarely means that (**tinyurl.com/MMnet88n**). And when it does, people tend to take advantage of the lack of restrictions (**tinyurl.com/MMnet88o**). Thus, in a move that didn't appear to be a shock to anyone, Microsoft has been forced to revoke its offer of unlimited OneDrive storage for Office 365 subscribers, and revert the service back to its previous 1TB limit (**tinyurl.com/MMnet88p**).

A blog post announcing the changes (**tinyurl.com/MMnet88q**) bemoaned the "extreme backup scenarios" of some users, who seemed insistent on using the dictionary defined meaning of 'Unlimited' and utilised the service they'd paid for to back up multiple computers and – in some cases – entire movie and DVR collections. Who could have possibly seen that coming (**tinyurl.com/MMnet88r**)? Some users, the blog states, racked up 75TB of cloud storage (14,000 times the average, apparently – which sets that at 5.5GB, maths fans). While that may seem a lot, we would again seek to point Microsoft to a dictionary. 'Unlimited' is kinda definitive, people – a fact some UK ISPs could do with getting their heads around.

Anyway, the offer's gone now, probably never to return, but it's not the only thing that's changing – a fact that's been attracting ire on social media.

We'll be covering this story in more detail next week, so you can find out exactly how it will affect you.

It's refreshing to know that we're not alone in questioning whether we should be allowed control of a Twitter account. Adele has the same problem too: **tinyurl.com/MMnet88s**.

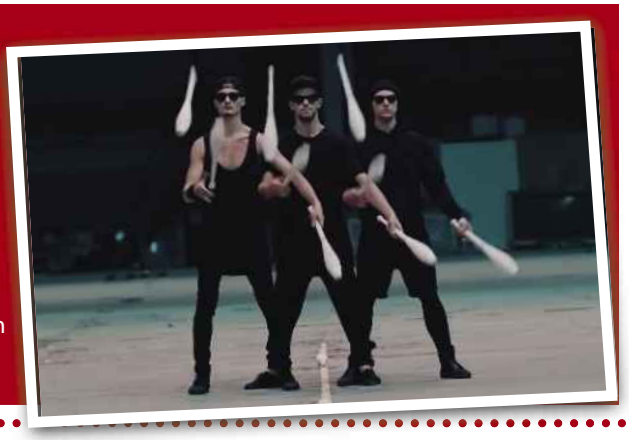
[1]*Aka The Snooper's Charter II, a redo of the plans that fell foul of coalition politics in 2013 (**tinyurl.com/MMnet88a**).*

[2]*At you've no doubt heard, these contained the proposal to compel ISPs to retain details of our browsing histories for a full year (**tinyurl.com/MMnet88e**), among other things. There's a great overview here: **tinyurl.com/MMnet88f**.*

.AVWhy?

Videos For Your Eyes...
Not Necessarily For Your Brain

Imagine: it's an average Friday afternoon, dear readers, and you're trying to finish off a much-loved technology column, not unlike this one. Brilliant and sharp though your rapier-like writing mind has become over years in the industry, the world keeps throwing you curveballs... Like, oh, we don't know... A new *Star Wars* trailer you weren't expecting (**tinyurl.com/MMnet88t**), which compels you to watch it repeatedly. Or hypnotic juggling videos (**tinyurl.com/MMnet88u**) that have you spending ages looking for the special effects. It makes it tough getting things done.



QUICK BITS... Wearable fitness tracker maker FitBit has been doing rather well for itself this year, tripling its third

Caption Competition

This angry young man was the star of Issue 1386's Caption Competition. You didn't disappoint.

- **doctoryorkie:** "Geeks love going clubbing."
- **wyliecoyoteuk:** "Roger had heard about HD HomeRun, but he wasn't quite sure how it would stream videos."
- **doctoryorkie:** "I'm Batman."
- **Teafie:** "Not how you get back at talk talk."
- **Thomas Turnbull:** "Someone said I had a trojan on my computer so I'm just waiting for it to show itself."
- **Mary Dowdles:** "Hit any key."
- **Chris Masters:** "The other type of laptop battery."
- **Kelly Jackson:**
- **Paul Organe:** "Dan was normally a calm fella, but no one should ever insult his quiff."
- **doctoryorkie:** "Now where's that any key?"
- **Lee Grimes:** "When flame wars escalate."
- **John Henderson:** "Online anger management course doesn't go according to plan."
- **wyliecoyoteuk:** "The new 3D 'Whack a mole' anti-popup tool."
- **Thomas Turnbull:** "Anti-virus programs now comes with accessories for those really stubborn viruses."

The winner, though, was Kelly Jackson with "Is this how you create a .bat file?" Nice! Very nice!

To enter this week, come up with something to accompany the picture below, head to the 'Other Stuff' section of our forum (**forum.micromart.co.uk**), or email us your funnies via **caption@micromart.co.uk**, remembering to add the issue number to the email subject line. Cheers!

Linux 4.3 Goes Global

General availability for Torvalds' latest released

So Linux 4.3 has gone on general release, with Linus Torvalds writing in a Linux Mailing List that changes from the release candidate were largely alterations to networking code. Torvalds wrote in the note: "We had a network update and a late fix for a x86 vm86 mode bug introduced by the vm86 cleanups, but other than that it's just a collection of various small one-liners all over. Ok, the vm86 mode thing was a one-liner too, it was just slightly more nerve-wracking because it looked scarier than it was before people figured out what was going on."

With security improvements, support for Intel's Skylake processors and Nvidia's graphics cards, the release also throws in support for VMware.

Prison Video Lands Inmates In Hot Water

Social media presence questioned

So just how did the inmates of a prison in Georgia, USA, manage to not only make a rap music video but also get that video out to the public via social media?

These are the questions facing authorities as news leaked out to the press of how the inmates at a prison in the area somehow got hold of video recording equipment and then duly recorded themselves performing the rap, before then getting it onto YouTube – the video is titled 'Thuggin' Live from DeKalb Jail' if you're interested.

The video itself shows a group of inmates dancing around and waving various contraband in the air, with the video visitation system used to transmit the video call. Naturally, the person who received and spread the video isn't allowed to visit the prison again, and we imagine that those taking part in it will be punished.

quarter sales compared with last year

Snippets!

PlayStation VR To Have External Processing Unit?

A talk given at a recent developer conference by a Sony executive has suggested that the PlayStation VR headset will come with its own external processing unit to look after the audio and video processing that's going to be going on, in order to keep things ticking over nicely.

Naturally, this would mean far less processing weight on the PS4 console itself but it could also mean that this headset might be rather bulky. We'll see.

Police Forces Will Trial Drones

Police forces in Dorset, Devon and Cornwall are trialling the use of drones to help with searches in missing persons cases and photographing crime scenes.

The six-month trial will help capture footage in terrain that would otherwise prove difficult to access, and they are going to complement the National Police Air Service.

This Christmas, I Want...

Unsurprisingly, technology is high on the most-wanted list among British shoppers, according to research from online auction site **www.MadBid.com**.

The most desired brand for the festive season is Apple, with over 50% of respondents saying that they'd want to unwrap an Apple gift on the big day, with the iPhone and iPad high on the list.

Fitness trackers were on the list too, which is also not a surprise. How many of those trackers will stay locked away in a drawer come the spring, though?

Arkham Knight Continues Ill-Fated PC Release

Plenty of patches; still broken

Now look, this is just beyond a joke. Warner Bros. had already taken down *Batman: Arkham Knight* from Steam, after many gamers complained about poor frame rates and what was basically a broken release. Several months after the title was taken down, it reappeared with a bunch of free downloads and a lower price. Also, vitally, a host of issues with the title had been fixed, apparently.

What a farce, then, that gamers should still be met with problems aplenty. Warner Bros. said that consumers might need 12GB of RAM to play the game properly, which is a ridiculous state of affairs in itself. More disastrous for both gamers and the company was the later announcement, within just a week of releasing the re-released game, that Warner Bros. was now offering full refunds to customers who had bought the game, regardless of how much time they'd spent on it, because they might not be willing to accept that there are some bugs in the game that simply cannot be fixed.

The refund is in place until the end of the year, and the publisher wrote on Steam's website, "We are very sorry that many of our customers continue to be unhappy with the PC version of *Batman: Arkham Knight*. We worked hard to get the game to live up to the standard you deserve but understand that many of you are still experiencing issues."

iPlayer Landing On Apple TV

It's been a long wait

The BBC's iPlayer service will be coming to the Apple TV after all. Not the current one, you understand. No, the forthcoming fourth-generation Apple TV.

For whatever reason, the BBC hasn't introduced a stand-alone, dedicated app for Apple's digital box and this is quite a big deal for the Beeb to make this move, although it is one that's been a long time coming, truth be told. As for the Apple TV itself, it is a bit of a step forward from the current generation, as it features voice activation and a glass touchpad for control too. The box itself will cost between £129 and £169, depending on whether you go for the 32GB or 64GB model. A lot more than the third-generation model, then, but this is one of Apple's big hopes outside of its usual areas of focus. Will Apple TV go from being a hobby project to something more serious? Let's wait and see.

QUICK BITS... Media reports have suggested that Google might be looking at a return to its

Chrome OS Has Some Life Left In It Yet

"No plan" to phase it out

Google has taken to the Chrome blog to calm speculation that the company was looking to kill off the Chrome OS by "folding" it into Android. That's not going to happen, people.

Writing on said blog, Hiroshi Lockheimer, SVP Android, Chrome OS and Chromecast, confirmed that there is "no plan" to phase out Chrome OS despite admitting that they have been looking at ways to bring together the best of both operating systems. In terms of timescales, Lockheimer confirmed that there would be guaranteed updates and a regular six-week software cycle for five years, so that's put a pretty firm date on things.

The blog post was also keen to point out upcoming availability of the Asus Chromebit system-on-a-stick dongle that transforms any display into a Chrome-powered desktop for the sum of $85.

Wikipedia Celebrates Five Millionth Entry

We want... a shrubbery!

The halls of the good ship Wikipedia were ringing out with hoorahs and hoozahs as the English-language version of the site published its five millionth article recently. The subject matter? Erm, a shrub.

Yes, Persoonia terminalis is, according to the entry, "a shrub belonging to the family Proteaceae" and it's native to eastern Australia. An Australian contributor added the significant entry, and it's good going for the site to have achieved this latest feat. And who doesn't like shrubs, eh?

King Bought By Activision Blizzard

$5.9bn buyout for Candy Crush developer

The firm behind *Candy Crush*, either a brilliant waste of time or a highly annoying mobile effort, depending on your mood, has been bought by Activision Blizzard for a whopping $5.9bn.

The reason for this is obvious: mobile gaming. Activision Blizzard is big on PC and console gaming, but this purchase will now give it a boost if it wants to make it in the mobile space too. And let's face it, that's where a lot of the smart money is at right now.

Nintendo Delays First Mobile App

Mii focus for inaugural effort

Media reports have suggested that Nintendo's first mobile phone app will be all about the Mii avatars created by Nintendo users.

The app is going to be called Miitomo and it's going to be "free to start", which does rather suggest in-game purchases will be the revenue spinner for the company. As for the crux of the game itself, Miitomo is all about helping folks communicate with each other via their Miis.

The app is being delayed, however, and won't be out until next March, because Nintendo wants to spend the holiday period promoting and shipping titles for the 3DS and Wii U consoles.

MSI Z170A Tomahawk

A powerhouse modern motherboard with at an equally impressive price

DETAILS
- **Price: £99.95**
- **Manufacturer: MSI**
- **Website: goo.gl/vh0d3V**
- **Requirements: Skylake CPU, DDR4 memory for best results**

The layout of the MSI Z170A Tomahawk is superbly designed

For under £100, this is a seriously good motherboard

The Skylake improvements with the new Z170 chipset make for an impressive list of specifications for both gamers and system builder. However, you'll be hard pressed to find a Z170 motherboard that costs less £100. Until now.

MSI has recently released its Z170A Tomahawk, an amazing motherboard that somehow manages to creep onto the shelves at £99.95. We won't get into the benefits a Z170 motherboard offers here, but suffice to say, just because this is a sub-£100 motherboard, that doesn't mean it's lacking in any way.

With four DDR4 slots, two PCIe x16, three PCIe x1 and a pair of PCI slots, there's enough upgrade and multi-GPU potential for every kind of system builder. Naturally, the Tomahawk takes Socket 1151 processors, with support for up to i7 CPUs.

Connectivity is good too, with a PS/2 keyboard/mouse combo port, two USB 2.0 ports, four USB 3.1 ports, gigabit Ethernet, HDMI, DVI, optical out and five OFC audio jacks. You'll also find a pair of M.2 ports, six SATA-3 connections and headers for a further two USB 3.1 ports.

The layout of the Z170A Tomahawk is good too. MSI has greatly improved the layout of its boards in recent years to better accommodate more elaborate cooling solutions. The heatsinks surrounding the CPU are well spaced and raised somewhat to allow a bigger cooler or a liquid cooling setup. There's also a decent gap between the memory slots and the CPU, so you won't get any interference from an overhanging cooler. The PCI layout is also better than most motherboards we've seen, with a good gap between the two PCIe x16 slots, while still having room for a smaller PCI card.

We tested the Tomahawk with an Intel i7-6700K and 8GB of Corsair Vengeance LPX DDR4 memory, with an Nvidia GTX780Ti, Intel SSD and Windows 10 installed. 3DMark11 came back with an overall score of 17,087, which certainly proves it's no slouch – even with the older GTX780Ti installed.

As you would expect from an MSI motherboard, the Tomahawk is laden with military grade, high-end components and comes with a list of features such as DDR4 Boost, better bandwidth management and a ton of overclocking possibilities. As we said, there's something for every type of system builder. Even if you're simply after a high-quality motherboard for everyday use, the Tomahawk will deliver the goods better than the competition.

Of course, the biggest draw to the Tomahawk over said competition is the price. The closest you'll likely come across at the moment is the Asus Z170-A for around £120. While a perfectly fine motherboard in itself, the lure of spending the better part of 20 quid less is hard to resist.

MSI has done a fantastic job of getting the Z170A Tomahawk out for under £100 and for making it as good as the other Z170 motherboards available.

If it's an all-singing, all-dancing and thoroughly modern motherboard you're after, then look no further than the MSI Z170A Tomahawk.

mm David Hayward

An excellent board, at just the right price

Samsung 950 Pro M.2 PCIe 256GB

When a very fast drive just isn't fast enough for you

DETAILS
- Price: £169.99 (Scan)
- Manufacturer: Samsung
- Website: www.samsung.com
- Requirements: System with M.2 2280 PCIe slot

The day that the Samsung 950 Pro arrived, I noticed that one online retailer was selling a 240GB OCZ Trion 100 for less than £50.

Given the price of the 256GB version of the Samsung 950 Pro, why would you want to pay this sort of money? There are very good reasons, trust me.

The first important thing to realise about the 950 Pro is that it isn't a SATA SSD but one that uses the M.2 specification. Therefore, to use it on your PC, you either need a motherboard that has M.2 slots or a PCIe card, and in this instance you need M.2 that supports PCIe operations and can take a 2280 scale device.

If you tick those boxes, then you can unleash the very latest V-NAND-based NVMe technology that supports connection to the system through four Gen 3 spec PCIe lanes, and not the narrow SATA-3 interface.

If you thought SATA SSDs were quick, then buckle up, because this technology is as big a leap from SATA SSD as that was from spinning platters.

This isn't Samsung's first foray into M.2, as it previously made the SM951, which was mostly aimed at business users with deep pockets. However, the new 950 Pro is for regular users and currently comes in the 256GB capacity reviewed here and a 512GB option.

Once the 950 Pro is connected to the M.2 slot and the system is powered up, it appears just like any other drive attached to your system, with one noticeable exception: this drive reads at a gobsmacking 2,200MB/s and writes at 900MB/s. That's not a typo; it really is that fast. And my benchmarking actually put it marginally higher on both reading and writing than those Samsung figures.

And it's not just a raw data shovelling monster either. The IOPS are equally fantastic for those who need to crunch data stored on one. According to Samsung, the 256GB model can drive 270,000 IOPS, while the 512GB one achieves a blistering 300,000 IOPS.

Accordingly, the 512GB one is a little quicker reading at 2,500MB/s and about 60% better at writing, rated at 1,500MB/s. Based on that, as impressed as I was with the 256GB model, the 512GB model is the one to have, if you can afford the £319.99 price.

If you can't, don't worry, because Windows launches off the 256GB model like it has been guzzling Red Bull.

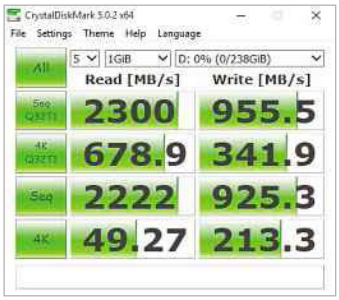
Normally, this is the part of the review where I call out something silly Samsung did or a huge drawback to balance the advantages, but there aren't any obvious ones here.

It's more power efficient than a conventional SSD, and this model's warranty is for five years or 200TB of data written, and the larger unit has double that TBW coverage.

The only problem is that once you've used one of these, there isn't any way to go back to SATA SSD, never mind a conventional hard drive, as they're way, way too slow.

mm Mark Pickavance

EDITOR'S CHOICE micro mart



The drive technology you always wanted

micro mart
9 Quality
9 Value
9 Overall

Pentax K-S2 DSLR

Pentax toughens up its latest DSLR for real-world shoots

DETAILS
- **Price: £649.99 (single lens kit)**
- **Manufacturer: Pentax (Ricoh)**
- **Website: www.ricoh-imaging.co.uk**

Logically, most people would see the Pentax K-S2 and assume it was a revamped K-S1, a camera that appeared relatively recently. Curiously, it isn't.

The Pentax K Series is still a DSLR, though it's sufficiently compact to be mistaken for a bridge camera, while offering full K-Mount interchangeable lenses. Where it differs from the K-S1 is that it now has a much more grown-up feature set, one that might attract those who take photography seriously, in addition to the typical happy snappers.

The most obvious enhancement is the weather resistant body, meaning it's designed to avoid liquid or dust getting where it shouldn't. That's not to say its waterproof, but a mild rain shower shouldn't inhibit shooting.

Weather proofing is the headline feature, but I found more enticing features for anyone who takes plenty of photos. For example, the rear LCD display can fully articulate, making it a useful alternative to the viewfinder. There's also built-in wi-fi and NFC, so you can blitz images to social media smartly, and even control the camera from your phone.

Along with the internal enhancements, Pentax also included a new standard lens on this model, a general purpose 18-50mm with an f4-5.6 aperture. This unusual lens design collapses down to just 40mm in length for transport.

One caveat to this design choice is that once collapsed, the camera isn't ready for immediate use, and expansion is a manual operation.

Another design diversion is that Pentax opted to use a sensor-based SR (shake reduction) system rather than the usual lens-based compensation.

The 20mp sensor also enables the K-S2 to crank out 5.5 frames per second on continuous mode, and it has a maximum shutter speed of 1/6000 sec and a low-light loving ISO sensitivity of 51200.

One other departure from tradition is the anti-aliasing method, where Pentax uses a sensor vibration technique that effectively simulates anti-aliasing without messing with the data.

Less technically ambitious is the autofocus system that uses a basic 11-point matrix called SAFOX X. With the included lens, it's remarkably fast and handles low-light focusing well, though much of that ability comes from its built-in motor. Older and cheaper K-Series lenses don't have a motor and are much slower as a result.

The real strength of the K-S2, in this reviewer's opinion, is the exceptionally compact and slick control layout. With your right hand gripping the K-S2, all the critical controls are positioned for direct access, freeing your left hand to either operate the few features on the left or provide extra shooting stability.

How quickly I adapted to this layout is testament to how well Pentax designed it. Primarily built around the control dial, it offers all the expected priority modes, along with access to video (1080p 30fps) and manual still options.

There's also A-HDR (advanced HDR) mode that gives this camera the ability to shoot handheld HDR without any great preparation. The only problem I had with using this is that it doesn't save the three frames it shoots, and to get the frames off quickly it tends to use a high ISO, introducing grain.

Features
- Weather resistant body with 100 protection joins.
- 28MP stabilised CMOS sensor with AA filterless.
- Sensitivity up to 51 200 ISO.
- Full HD recording with 30fps H.264 codec.
- Built-in wi-fi and NFC modules with dedicated button for instantaneous communication with smartphones or tablet.

The A-HDR mode also only allows whole stop offsets, though thankfully there is an alternative bracketing method with greater offset control for use with a tripod.

The scope of shooting modes is generally great, and there are things in there for people who are interested in time-lapse, star stream and multi-exposure projects.

All still shooting can be in JPEG or RAW, and the RAW can either be in PEF or more generally acceptable DNG format. Staying at ISO 6400 or below, you can get some stunning shots especially in RAW mode, where the camera won't excessively process the image as it does with JPEG.

Once you get a hang of all the modes and how best to exploit the sensor, this is a remarkably good camera that would be suitable for many who haven't already aligned with Nikon, Canon or Sony.

The price is probably about right for what technology Pentax shoehorned into it. However, I've checked around, and you can find the single lens kit for less than £500. At that price, this is an absolute bargain.

The body can be bought alone (£549.99 RRP), and there's a dual lens kit, which also comes with a 50-200mm F4-5.6 lens (£649.99 RRP) and a premium lens kit featuring a 18-135mm F3.5-5 glass (£879.99 RRP). And, it comes in four colours, if you prefer something distinctive looking.

Overall, the K-S2 is a terrific camera and something I'd be more interested in taking on a jungle or desert shoot than my huge Nikon DSLR.

mm Mark Pickavance

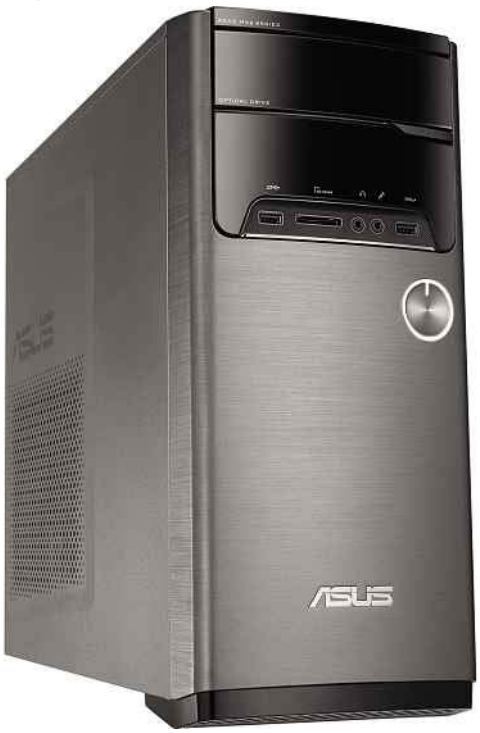
A powerful and go-anywhere compact DSLR camera

micro mart
8 Quality
7 Value
8 Overall

Asus M32AD

An entry-level family PC, at a good price

DETAILS
- **Price: Around £470**
- **Manufacturer: Asus**
- **Website: goo.gl/ra3eSz**
- **Requirements: Monitor, Microsoft account for apps**



The Asus range of PCs look rather good these days

The M32AD may not score the highest in benchmarks, but it doesn't cost too much

We recently had the opportunity to review the Asus M52AD-Xtreme PC, and although it performed well enough, the overall cost of the machine was a little steep.

Now, though, it's the turn of the Asus M32AD. Labelled as 'The Perfect Home Computer', Asus has taken the best elements of the Xtreme series and folded them into a more reasonably priced system that would work well as a family PC.

Inside you'll find a 3.7GHz Intel i3-4170, 6GB of 1600MHz DDR3 memory and a single 1TB hard drive (with Windows 8.1 on it), along with a selection of Asus programs and tools.

The GPU used in the M32AD is an Asus-branded Nvidia GT 710, with 1GB of memory. It's not the most powerful graphics card to ever leave the Asus factory, but for things like basic photo and video editing, along with some gaming duties, it's powerful enough.

Connectivity is quite good. There's HDMI, DVI and VGA at the rear of the GT 710, with three USB 2.0 ports, blocked (due to the GPU) HDMI and DVI ports, a six-port audio setup and gigabit Ethernet. There's also a small 802.11 a/b/g/n/ac wi-fi card with an external slim antenna packaged separately in the box.

In addition to that, you'll also find a six-in-one card reader, a further two USB 2.0 ports and a pair of USB 3.0 ports on the front console, with a DVD-RW optical drive hidden discretely behind the glossy, flip-down drive bay cover.

The design of the M32AD is very similar to that of the aforementioned M52AD-Xtreme. However, in this instance the case is coloured gunmetal grey, with black glossy sections throughout. Thankfully, Asus has decided to leave the large silver metallic, LED backlit power button intact for this model.

In terms of performance, the M32AD didn't fare too well in the 3DMark11 test, scoring only 1,142, meaning it was rated as being less powerful than a basic laptop. Naturally, you're not going to be playing *Star War Battlefront* on this anytime soon, unless you swap out the GPU and processor for something a little meatier. Saying that, though, it did perform well enough for basic work, and photo and video tests.

The PCMark8 test fared a little better, with a score of 3,556, which just emphasises the system's suitability as a family PC.

Again, much like the M52AD-Xtreme, this Asus system is very neatly presented. It looks good, has enough internal space, and it also has some limited upgrade potential. Thankfully, it's not as expensive as the M52AD-Xtreme was, though. At around £470, the M32AD is more reasonable for those who need a solid working PC and are on a tighter budget.

The included Asus apps consist of 100GB of Asus cloud storage, McAfee Internet Security, Cyberlink PhotoDirector and Music Maker Jam audio software, along with a selection of Windows 8.1/10 apps such as Netflix and so on.

Overall, it's a good enough system for those on a budget, but it does lack some kick in the performance stakes. With a slightly better graphics card, an SSD as the system drive and an i5 in favour of the i3, it would have performed much better and would make a more appealing PC. Plus the final cost wouldn't have been that much more.

mm David Hayward

Another good family PC from Asus

Asus ZenPad 8.0 Z380C

A budget tablet that's ideal for most users

DETAILS
- Price: £99
- Manufacturer: Asus
- Website: goo.gl/5P1hou
- Requirements: Google account

The rear cover can be removed and swapped out for something more colourful

Although it's a budget tablet, the screen is remarkably clear, and it performs well enough too

We recently reviewed the very capable 8" Asus ZenPad S 8.0 Z580CA and were really quite pleased with its performance, cost and style. Now it's the turn of its younger sibling, the ZenPad 8.0 Z380C. Can it keep up the good ZenPad family name?

Although it's a lesser-powered tablet than the Z580CA, the Z380C is certainly no slouch. Inside you'll find an Intel Atom x3-C3200 quad-core, 64-bit processor running at 1GHz, with 2GB of memory. There's 16GB of storage available, Android 5.0.2, and a selection of Asus apps.

The Mali-450 MP4 GPU manages to kick out enough graphical detail to drive the 8" LED backlight WXGA IPS panel to a maximum resolution of 1280 x 800. The screen itself has the same anti-fingerprint coating and Asus Tru2Life technology as the Z580CA model, although not at as high a resolution. It is, though, just as clear, bright and colourful.

There's the usual 802.11 b/g/n wi-fi, Bluetooth 4.0 and Miracast support, with a micro-USB port for charging, a two-in-one audio jack and micro-SD card slot that supports cards up to 64GB in size. The 2MP front and 5MP rear cameras complete the standard array of tablet technology.

Although the ZenPad Z380C may seem a little underpowered on paper, it performs surprisingly well – well enough to play the latest Android games without too much difficulty, at least. The same goes for video and audio.

The design of the Z380C is good too, with a stark white plastic bezel and surround with metallic looking volume and power buttons to one side. The rear of the Z380C has a removable, textured polycarbonate cover that can be swapped out for a range of colours to appeal to the user in question, with each cover costing around £14.

It measures 209 x 123 x 8.5mm and is a lightweight 350g. This makes it an ideal ebook reader that can be held for an extended period, and a tablet that can easily be thrown in a bag or coat pocket without it taking up too much space.

The Z380C comes with a set of Asus apps, such as ZenMotion, which allows the user to create custom gestures, and various productivity apps. You also get 5GB of Asus's cloud storage for the life of the device and 100GB of Google Drive space for two years.

Surprisingly, the Asus ZenPad 8.0 Z380C only costs £99, which is a pretty good price for a decent all-round tablet. While it's not the most powerful device we've ever reviewed, the Geekbench 3 single-core score was 453, while the multi-core score was 1,134.

We liked the Asus ZenPad 8.0 Z380C. It's ideal for younger users, as their first tablet, for example, or as a more useful ereader device. The battery lasted a good ten to 11 hours with average use, and it's quite a stylish, functional tablet that doesn't cost too much.

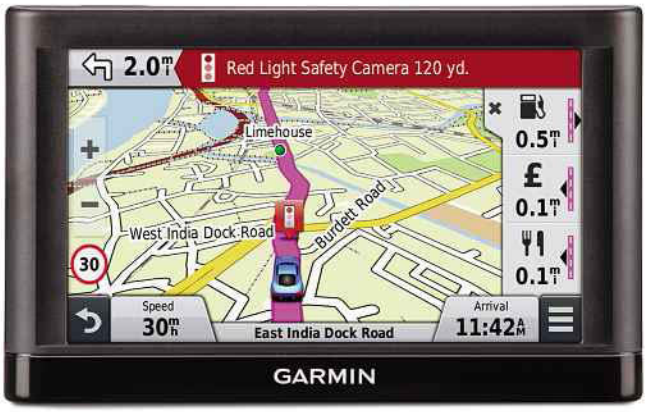
mm David Hayward

A decent tablet at an even better price

Garmin Nüvi 65 LM

Michael Fereday takes a satnav for a drive around his neighbourhood

DETAILS
- **Price: £99.99**
- **Manufacturer: Garmin**
- **Website: www.garmin.com**
- **Requirements: n.a.**



Providing navigational aids is the designated task of the Garmin Nüvi 65 LM satnav. This product comes with free UK and Ireland maps for the lifetime of the device. Supplied with the satnav are a vehicle suction cup mount, a power cable for use with the car's cigarette lighter socket and a standard-to-mini-USB lead.

Featuring a 6" touchscreen, the Nüvi 65 LM has dimensions of 170 x 95 x 20mm (W x H x D). Located at the rear of the unit are a circular area for attaching the windscreen mounting module, mini USB port for linking to a computer, speaker outlet and a slot for inserting a micro-SD card. Positioned on the top-left corner of the satnav is a recessed power button. This button can power up the device away from the car, with power being provided by the internal battery, which can give up to two hours of use.

In order to gain the full benefit of updated maps, you'll need to download the free Garmin Express software, which is available for Windows and Mac platforms. This utility will check for updates and download those you select onto the device via a USB connection to a computer. In the case of map updates, these downloads can be large and rather time consuming, so they need to be conducted when time is not an issue.

Initially setting up this satnav is best carried out away from your car, when you can give it your full attention. Following a couple of introductory and warning screens regarding the safe use of the device, you're presented with options entitled Where To? and View Map plus Apps, Volume and Settings features. When entering destination and home details, you can use postcodes or town and street details, plus opt for a search facility that uses categories such as Restaurants, Shopping and Petrol Stations. The Nüvi 65 LM can also offer assistance when searching for locations that include Fitness & Gym establishments, Places of Worship and Schools.

Maps can be displayed on the screen in either 2D or 3D mode. The currently displayed area will be overlaid with speed and direction details. Plus and minus signs can be used for zooming in and out of the current map view. There is also an option for an Up Ahead feature that indicates establishments such as food outlets and petrol stations that you might like to visit on the route ahead.

When delivering navigation instructions, the Nüvi 65 LM gives you a choice of three British voices identified as Kate, Serena or James. You can adjust the volume level for your chosen navigator, especially useful if, like me, you like to listen to music while travelling. The instructions are clear and precise, with street names being used to reduce confusion when making turns. You're also not overburdened with repeated instructions for events some way ahead during motorway travel.

If route alterations are required for any reason, such as the driver opting for a favourite shortcut rather than the suggested route, then they're carried out quickly, and I was not once requested to make a U-turn due to my ignoring an instruction. As well as spoken instructions, there are also options to receive audible warnings of speed cameras and any instances of breaking the speed limit.

As you'd expect from a satnav specialist such as Garmin, it does everything that's required of it, and it does it with aplomb.

mm Michael Fereday

A handy device with precise and clear navigation instructions

Speedlink Xilu Speaker

Big sound from a small package

DETAILS
- **Price: £22.99**
- **Manufacturer: Speedlink**
- **Website: goo.gl/FIEMBO**
- **Requirements: USB power source, Bluetooth device for best results**

It may be small, but the Speedlink Xilu packs a decent audio punch

It's not the cheapest Bluetooth speaker, but it looks good and performs well

Speedlink is quite famous now for its line of mobile, Bluetooth speakers. The Portajoy, Playawave and Amparo range are all considered as some of the best portable speakers for your phone or tablet.

This time round, we have the company's newest portable speaker on test, the Xilu. This miniature cuboid speaker measures just 50 x 50 x 50mm and weighs a mere 8g, but it manages to belt out a decent 2.3W RMS power from the driver that's positioned at the top of the unit.

Obviously you're not going to get the kind of quality a serious audiophile would appreciate, but if you just want a tiny speaker at your side, it works extraordinarily well. Since it's Bluetooth, connecting to the speaker is as easy as scanning and pairing via your phone or tablet. It has a rough range of around ten metres, so it can easily cover most of an average sized house and garden.

The internal li-ion battery takes a couple of hours to fully charge, as indicated by the small LED at the bottom of the Xilu, and once fully charged it'll happily last several hours before needing to hook up to a USB power source once more.

The design is simple enough. The sides of the Xilu are made from brushed aluminium, with the Speedlink logo at the front. And there are line-in and micro-USB power ports on one side and an power switch on the rear. The top houses the mesh-covered driver, as we previously mentioned, and the bottom features four small rubber feet, along with a basic control dial for volume, play/pause/stop and track forward and back.

> **"If you just want a tiny speaker at your side, it works extraordinarily well"**

Finally, the Xilu has one more trick up its sleeve. The integrated microphone allows you to intercept calls while listening to music. While it's a little tinny in the voice department in terms of answering a call, you can still be understood clearly by the person on the other end of the line.

In the box, you'll get a limited half-metre micro-USB cable and a similarly sized 3.5mm audio cable, along with the instructions, quick installation, info guide and so on.

Considering its size and obvious limitations, the Xilu actually sounds quite good. You lose a lot of the throaty bass you'll get from a larger speaker, but it's loud enough to enjoy without having to strain your hearing or leaning into it to hear what's playing. It's also remarkably clear, without any hint of distortion when the volume levels are at the maximum. It's quite unusual to find a small portable speaker that doesn't distort at louder volumes, so the Xilu must have some good quality components hidden within the 50cm shell.

The Xilu is available for around £22.99, which isn't the cheapest Bluetooth portable speaker we've ever come across; however, it's really quite good. If you're looking to replace a static set of speakers for your kitchen or you want something a little louder for your tablet and phone, then the Speedlink Xilu is £23 well spent.

mm **David Hayward**

A handy little portable speaker, with some decent audio

GROUP TEST

£750 PC

A while ago, we ran a £1,000 system group test, looking at the mid-level gaming machines from a collection of suppliers.

This time around, we're checking out £750 all-round, family PCs, the kind that would suit all members of a family and cover everything from work, study and gaming, to watching HD content and editing photos and videos.

We have six on test from different suppliers, and David Hayward is the man seeing what they have to offer.

£750 PC

Computer Orbit – orBIT Sidewinder

DETAILS
- **Price: £750**
- **Manufacturer: Computer Orbit**
- **Website: goo.gl/af8zzY**
- **Warranty: Two-year RTB, unlimited email and phone**

Using an MSI GTX950 is a good choice

Computer Orbit is a regular in the pages of Micro Mart and has been going since 1996, providing some well-balanced systems with decent prices.

The PC the company sent through to us is the orBIT Sidewinder, a nicely specified system housed in the rather splendid Cooler Master Silencio 352 case, complete with noise cancelling foam lined doors and side panels.

The Sidewinder is made up of an Asus B85M-G 1150 motherboard with an Intel 3.2GHz i5-4460 quad-core processor and a healthy 16GB of 1600MHz Corsair Vengeance memory. A 120GB Kingston SSDNow V300 SSD is the main system drive, with Windows 10 Home 64-bit, plus there's a further Seagate Barracuda 2TB hard drive as secondary storage.

Graphics come courtesy of an MSI 2GB Nvidia GTX950 OC Edition, an excellent choice of GPU with DisplayPort, HDMI and a pair of dual-link DVI connections. The OC Edition has a base clock speed of 1076MHz and a boost clock speed of 1253MHz – a good 5% higher than the standard 950 GPU.

The Cooler Master Silencio 352 case from Computer Orbit is quite impressive

Computer orbBit has also had the insight to fit a TP-Link TL-WN881ND PCIe wireless card, with a pair of antennas being included in the packaging, along with the various motherboard and GPU drivers. It's a good addition, especially for a family computer, where running cables isn't always a viable option.

Other features include a DVD writer, a Logitech MK120 wired keyboard and mouse kit, Microsoft Office Home and Student 2013 single user licence, BitDefender Internet Security 2015 single user one-year licence, a two-year return-to-base hardware warranty and unlimited phone and email support. And helping to drive the hardware is a 500W Aerocool Integrator 80+ Bronze-rated PSU.

The 3DMark 11 overall score was 7,864, which isn't too bad at all and certainly sufficient for high detail settings on most if not all current games. The PCMark 8 score, for a more rounded system benchmark, was also a more than adequate 4,274.

The system was very responsive and performed perfectly well with the basic real-world tests we conducted (i.e. playing a couple of games, doing some work, watching a HD video, photo and video editing and so on). It was quick to boot, and thanks to the decent hardware it was pretty slick in every operation we could think of.

The presentation of the system is impeccable. Not only has Computer Orbit sourced some excellent components, but also ones that look good and perform excellently. Furthermore, the interior is neatly put together, with power and data cables tidily tucked away and cable-tied to the rear of the case. There's plenty of airflow for the large 120mm front and rear fans, including the stock Intel cooler and the MSI GPU cooler.

In short, Computer Orbit Sidewinder is a great example of a family computer. There's plenty of potential for gaming, as well as study and work too. It's powerful enough to last quite a few years without becoming obsolete, and it's wonderfully presented as well.

The Computer Orbit SideWinder should be on sale by the time you read this.

Falcon Computers

DETAILS
- **Price: £749.99**
- **Manufacturer: Falcon Computers**
- **Website: goo.gl/55xt80**
- **Warranty: Two-year on-site**

▲ *The startling Zalman case hides some amazing all-round performance*

▲ *The Asus GPU is remarkably powerful and pushes the gaming performance*

Falcon has impressed us in the past with its attention to detail, the wide range of options available for each system and the performance of the systems it supplies.

The PC it sent for this group consists of a stark white Zalman Z3 Plus case, in which you'll find a Gigabyte Z97P-D3 1150 motherboard, a 3.2GHz Intel i5-4460 quad-core processor and 8GB of HyperX Fury 1600MHz memory.

You get Windows 10 Home 64-bit on a 120GB OCZ Trion SSD, and a Seagate 1TB hard drive as the secondary storage option.

The GPU in the Falcon system is an Asus Nvidia GTX950 2GB Strix Edition, with a GPU base clock speed of 1140MHZ – a good 11% increase from the standard GTX950 GPU. The boost clock speed too is a bigger improvement at 1329MHZ, a massive 12% increase from the standard 950. It's a good choice of card, pipping the MSI GTX950 OC Edition we found in the Computer orbBit system by at least another 6% on top of the original clock speeds.

Other features include an identical 500W Aerocool 80+ Bronze PSU to the one in the Computer orbBit PC, a Microsoft Wired Desktop 400 keyboard and mouse bundle, a DVD writer and a pair of large 120mm blue LED front case fans. In terms of software, there's a boxed copy of Office 365 with a one-year subscription for up to five PCs and five tablets, free copies of *Battlefield 4* and *World Rally Championship 3*, and Bull Guard Internet Security with a three-user family licence.

Internally it's extremely neat, with cables tied to the back of the case for maximum airflow over the individual components. There's plenty of scope for future upgrading, even as far as a dual graphics card setup, should it be used more as a family gaming system.

> **"The performance is great and the entire thing looks good too"**

The system itself is certainly well presented, with its white Zalman windowed case and blue LEDs. As with every Falcon system we've had through our doors, it's meticulously built and packaged both within the case as well as without for extra peace of mind for delivery. Added to this, of course, is the two-year on-site warranty upgrade from Falcon for free.

The 3DMark 11 overall score beat the Computer orbBit entry by just under 100 points, with 7m934. It was close, but suffice to say it'll handle high graphical settings for the latest games with ease. And the final PCMark 8 score of 4,458 is ideal for a family PC that's going to be used for a variety of duties.

In our basic real-world tests, the Falcon PC performed extremely well. It's a really responsive system that not only boots quickly to the desktop but is also very quiet and capable of running any work-related program, image/video editing software or game.

There's enough hardware and software here for the perfect family PC. The performance is great and the entire thing looks good too. Falcon Computers has done a sterling job here – and all for £749.99. You'll be hard pressed to find anything better for this price.

£750 PC

Eclipse Computers

DETAILS
- **Price: £749.95**
- **Manufacturer: Eclipse Computers**
- **Website: goo.gl/EFpgcj**
- **Warranty: Three-years RTB, one-year parts, 30-day collect and repair**

The Eclipse Max i564n950 consists of a Fractal Design Core 2300 Gaming Case, Asus Z170-P motherboard, a 2.7GHz Intel i5-6400 quad-core Skylake CPU and 8GB of Corsair Vengeance LPX DDR4 2400MHz memory.

There's a 120GB HyperX Fury SSD (with Windows 10 Home 64-bit on it) and a secondary 1TB Seagate Barracuda hard drive to beef up the storage. A Samsung SH-224FB DVD writer, a Wireless N PCI card, a Corsair VS series 550W PSU, a CiT Keyboard and mouse set and a pair of Power Cool Pro Audio 370 5W desktop speakers complete this well-rounded system setup. The speakers are a nice touch too and a good incentive for a family computer.

The graphics come courtesy of a Palit GeForce GTX950 StormX, with 2GB of GDDR5 memory, a base clock of 1026MHz and a boost clock of 1190MHz, which makes it slightly quicker than the stock GTX 950 cards. Connectivity on the StormX is good, with HDMI, DVI-I, DVI-D and a DisplayPort. Clearly, it's a very capable GPU and one that will give you medium to high settings on most recent titles.

The 3DMark 11 test revealed an overall score of 7,939, while the PCMark 8 score of 4,448 was equally impressive and places it roughly equal to the system from Falcon Computers.

The Eclipse Computers' Zalman case is very slick

The clever mix of components makes for a well-rounded family PC

In terms of the system build quality, there's little if anything to fault Eclipse on. The system is whisper quiet and runs extremely cool thanks to the large Zalman CNPS11X Performa Quiet CPU cooler that dominates the upper section of the case. Also a pair of 120mm fans on both the front and rear improve the base cooling.

The upgrade potential for the Eclipse Max is excellent, and there's still plenty of room within the Fractal Design Core case, which we also think is well designed and looks superb, and the supplied Asus Z170-P motherboard is another good choice, as it offers further GPU expansion with a pair of PCIe x16 slots. There's even an M.2 connection, making full use of the new Skylake technology.

From the software side of things, Eclipse has included a one-year, single licence copy of Microsoft Office 365 Personal and a one year subscription to Bullguard Internet Security V14.

To be honest, it's a really good system Eclipse has built. If we have to point out one flaw, then that would be the choice of keyboard and mouse combo. While perfectly functional, we did find the mouse suppled with the CiT KBMS-001 kit to be a bit poor, as the buttons were very stiff, and it didn't perform well on some of the surfaces we used it on.

Overall, this is a great system and with the three-year return-to-base warranty, one-year parts and a 30-day collect and repair included in the price, there's plenty to like about the Eclipse Max i564n950.

Chillblast Fusion Centurion

DETAILS
- **Price: £747.98**
- **Manufacturer: Chillblast Computers**
- **Website: goo.gl/5kRVeH**
- **Warranty: Five-year, two-year collect and return**

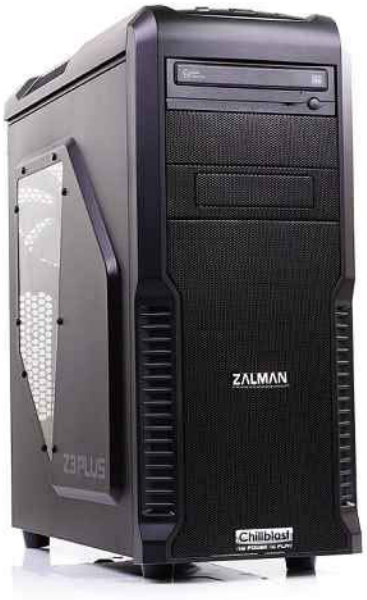
Chillblast has a long history of building award-winning PCs for both gamers and those who just want a stable but more than capable family system.

The PC Chillblast has supplied us with in this instance is a little different from the rest of the group so far, in terms of its specifications. Chillblast has opted for a new Intel Core i5 6600K Skylake processor instead of the more traditional i5-4460 we saw from Falcon and Computer Orbit and the 6400 we saw from Eclipse Computers.

To complement the new processor, there's 8GB of Crucial DDR4 2133MHz memory and a 128GB Samsung SM95 M.2 PCIe SSD, on which there's a copy of Windows 10 Home 64-bit. For secondary mass storage, there's a 1TB Seagate 7200rpm hard drive with a single partition pre-configured and empty.

The Asus Z170-K motherboard is a good choice here, with excellent gaming audio, USB 3.1 and support for multiple GPUs. Speaking of which, the graphics card installed by Chillblast is an EVGA GTX750 with 1GB of memory. It's a slightly older card than the GTX950s that are installed in the other group systems, but it still manages to knock out a decent GPU clock speed of 1020MHz, with a boost of 1085MHz.

Connectivity is good on both the EVGA card and the Asus motherboard. The card offers DVI, HDMI and DisplayPort, while the IO on the motherboard houses two PS/2 ports, DVI, HDMI, gigabit Ethernet, VGA, a single Type-C USB, two USB 3.1 ports (coloured teal/blue) and a pair of USB 2.0 ports; a three port audio setup finishes off the rear connectivity.



The Chillblast Zalman case hides the latest Skylake processor

The GTX750 may be a little older, but the overall performance of this system is impressive

The entire setup is installed inside a Zalman Z3 Plus case, with a large 120mm blue LED fan mounted on the front and a non-LED 120mm fan to the rear. There's plenty of scope for more cooling, with a pair of rubberised grommets to the back of the case to fit any liquid cooling pipes.

The case itself is well designed, solid and looks very good indeed. There are three USB ports on the top-front of the case, one of which is USB 3.0, together with a headphone and microphone port. Chillblast has also installed a DVD-RW drive and an Aerocool 500W 80+ PSU.

To finish off the specifications, there's a Logitech MK270 wireless keyboard and mouse kit; Bullguard Internet Security with a one-year, three-PC licence installed (and supplied with the CD); and a copy of Open Office 4.1.1.

In terms of performance, the Chillblast Fusion Centurion managed to score 6,111 in the 3DMark 11 benchmark. Although that's lower than other PCs in this group test, that doesn't mean it's not capable of dishing out some decent gaming graphics when the need arises. However, it's worth pointing out that should the PC end up being used more as a gaming machine, then you'll likely need to consider a GPU upgrade.

The PCMark 8 score of 4,575 is great, though, and proves that it's a fantastic all-round family, media and work PC.

With a five-year warranty, with two years collect and return, the Chillblast Fusion Centurion is an excellent PC. It's extremely well built, with excellent cable management, a choice of software and a combination of up-to-date hardware.

PC Specialist

DETAILS
- **Price: £699**
- **Manufacturer: PC Specialist**
- **Website: goo.gl/yiVttS**
- **Warranty: Three years, one-month collect and return, one-year parts, three years labour**

PC Specialist has used a Cooler Master Silencio 452 with its £750 entry

Together with a great mix of components, this is an unbelievable machine for just £699

The long list of systems available from PC Specialist is enough to keep enthusiasts entertained for days. In this case, though, the company has sent us one of the most surprising systems of this group test.

The PC Specialist system comprises of an 3.2GHz Intel i5-6500 processor, with 8GB of HyperX DDR3 1600MHz memory fitted to an Asus H110M-D D3 motherboard. There's an impressive 240GB HyperX Savage SSD as the system drive, with Windows Home 64-bit Edition preinstalled, and a further 1TB Toshiba 7200rpm hard drive configured in a single partition.

Graphics come courtesy of a Palit GeForce GTX950 with 2GB of memory, another of the StomX models that we first saw in the system from Eclipse Computers. As before, this GTX950 card is clocked slightly higher than the standard GM206 GPU, at 1024MHz with a boost of 1188MHz.

PC Specialist has also included an 802.11N PCIe wi-fi card, with a pair of antennas in the box, a DVD-RW, Corsair 450W VSD-450 PSU and a Titan Dragonfly silent CPU cooler. The case used here is a Cooler Master Silencio 452, a slightly upgraded version of the Silencio 352 that we saw with the Computer Orbit system.

In terms of software, there's a boxed version of Microsoft Office 365 Personal Subscription for a single PC and tablet, and a boxed version of Bullguard Internet Security for one year (three users) and 100MB of cloud backup.

As for connectivity ,the Palit card offers a pair of DVI ports, HDMI and DisplayPort, with the rear IO of the Asus H110M-D D3 offering a single combo PS/2 port, two USB 3.0 ports, HDMI, VGA, two USB 2.0 ports, three audio jacks and, quite remarkably, a parallel and serial COM port.

The 3DMark 11 graphics test returned a pretty decent score of 7,750, and while not the fastest, it'll certainly be capable of higher graphics settings for a wealth of modern games. The PCMark 8 test scored an equally impressive 4,429, making this another ideal family specified PC.

The Silencio 452 is a sleek, black case with a large, hinged door hiding the front drive bays. There are a pair of 120mm fans, one at the front and one at the rear, and there's plenty of space inside the case for more components should you need to upgrade anything. Furthermore, there are a couple of rubber grommets at the rear of the case for a more elaborate cooling solution.

> **"More than enough to cope with the demands of an average family"**

The use of the Asus H110M-D D3 micro-ATX motherboard does limit the upgrade potential for any motherboard-based enhancements, such as a multiple GPU setup in the future, but essentially, what PC Specialist has installed will be more than enough to cope with the demands of an average family.

However, the surprising thing that we mentioned at the beginning of this review is the fact that PC Specialist is selling this particular PC for just £699. This also includes, by the way, a three-year company standard warranty, with one-month collect and return, one-year parts and three years labour.

The PC Specialist system is superbly built, with an excellent specification, but the icing on this particular cake is the price, which is fantastic value for a family PC.

Box.co.uk Cube Classic

DETAILS
- **Price: £749.99**
- **Manufacturer: Box.co.uk**
- **Website: goo.gl/lOf270**
- **Warranty: Two-year (first year collect and return, second year RTB)**

The last system in this group is one of the most remarkable looking we've seen in a long time. Unboxing the Cube Classic and removing the protective packaging reveals the NZXT H230 mid-tower case, quite easily one of the most splendid cases available today.

The wow factor doesn't stop there, though. Inside, Box has opted for a splendid combination of components. You'll find a 2.7GHz Intel Skylake Core i5-6400 with 16GB of HyperX Fury 2133MHz DDR4 memory and a Seagate 1TB SSHD, with Windows 10 Home 64-bit edition pre-installed.

Graphics come courtesy of a 2GB MSI GTX950 OC Edition, the same make and model as in the one in the Computer Orbit system. As before, this GPU offers a higher base and boost clock, along with connectivity in the form of DisplayPort, HDMI and two dual-link DVI ports.

The motherboard is an MSI B150M PRO-DH micro-ATX, with four USB 3.1 ports, a pair of USB 2.0 ports, two PS/2 ports, HDMI, DVI, gigabit Ethernet and a trio of audio jacks. The PCIe x16 slot is taken up by the MSI GTX950, and the remaining PCIe x1 slot has an Asus PCE-N10 wireless adapter installed.

The stunning-looking NZXT case from Box.co.uk

With a good use of the latest components, the Box system is the performance leader

The Cube Classic comes with a Microsoft Wireless 800 keyboard and mouse kit, a Kingston DataTraveller 16GB USB stick, a copy of MS Office 365 Home (one year for five PCs/Macs and five tablets), McAfee Internet Security 2015 (single user, one year) and a code for the game *Heroes of the Storm*.

The front of the system houses a Samsung DVD-RW drive and a 32-in-1 memory card reader – all neatly tucked away behind the NZXT H230's glossy hinged door.

The system is immaculately designed and built, and there's ample room for extra drives or liquid cooling (there are a couple of metal push-through grommets). The motherboard doesn't offer a huge amount of upgrade potential (for example, you won't be able to upgrade to a multiple GPU setup in the future), but in this instance it's enough for a family PC.

In terms of performance, the Box Cube Classic came back with some surprising numbers. For example, the 3DMark 11 score blew the competition out of the water with an impressive 8,110 – well over 100 points above the former leader.

The PCMark 8 score was similarly eye-opening, with a score of 4,690. This makes the Cube Classic a highly capable PC for the family, and you'll have no trouble running the latest games, as well as office or media editing applications.

The Box Cube Classic is simply a fantastic PC. For £750 you're getting an exceptionally designed and specified system, and it's presented in a stunning case too. Plus you get a two-year warranty, with the first year being collect-and-return and the second year return-to-base.

Box.co.uk Cube Classic

It was difficult decision, because the entire group was exceptionally good. However, we think with the right mix of software, hardware, performance, warranty and price, the best system has to be the PC from Box.co.uk.

That said, don't discount the other excellent systems on test, because it really was a tough call.

PC Specialist

Again, this was another very difficult decision to make, but we feel that the system from PC Specialist may have just pipped the others to the post in terms of the price, overall performance, choice of hardware and software and warranty.

How We Tested

Each entry was specified as an all-round, good performing, family PC, suitable for work, study, gaming, and photo and video editing

We ran 3DMark11 and PCMark 8 on each system to roughly gauge the gaming and general performance of the computers, but not as a defining indicator. The emphasis was on a combination of performance, quality of the build, quality of the individual components, potential for upgrades, the services, the hardware and the type of warranty offered by each company.

	Computer Orbit	Falcon Computers	Eclipse Computers	Chillblast	PC Specialist	Box.co.uk
Price	£750	£749.99	£749.95	£747.98	£699	£749.99
CPU	i5-4460 3.2GHz	i5-4460 3.2GHz	i5-6400 2.7GHz	i5-6600K 3.5GHz	i5-6500 3.2GHz	i5-6400 2.7GHz
Memory	16GB	8GB	8GB	8GB	8GB	16GB
Graphics	MSI 2GB GTX950	Asus 2GB GTX950	Palit 2GB GTX950	EVGA 1GB GTX750	Palit 2GB GTX950	MSI 2GB GTX950
Storage	120GB SSD/2TB HDD	120GB SSD/1TB HDD	120GB SSD/1 TB HDD	128GB M.2 SSD/1TB HDD	240GB SSD/1TB HDD	1TB SSHD
3DMark 11 Score	7864	7934	7939	6111	7750	8110
PCMark8 Score	4274	4458	4448	4575	4429	4690
Keyboard And Mouse	Logitech MK120	MS 400 bundle	CiT KBMS-001	Logitech MK270	Logitech MK270	MS Wireless 800
Software	MS Office Home 2013, Bitdefender IS2015	Office 365, Bullguard IS, Battlefield 4, World Rally Championship	MS Office 365, Bullguard IS v14	Open Office 4.1.1, Bullguard IS2015	MS Office 365, Bullguard IS2015	MS Office 365, McAfee IS 2015, Heroes of the Storm
Warranty	Two-year RTB, unlimited email and phone	Two-year on-site	Three years RTB, one-year parts, 30-day collect and repair	Five-year, two-year collect and return	Three years, one-month collect and return, one-year parts, three years labour	Two-year, first year collect-and-return, second year RTB

Your Letters

The Windows 10 Gift Horse – So Hard To Believe!

I can't help thinking that Microsoft are mighty generous in giving away Windows 10 to all users of versions 7, 8 and 8.1. I applauded their largesse, but at the same time I'm wondering where's the pay back for Microsoft? Like all companies worldwide, they are subject to their shareholders wish for increase in profit margins and dividend payouts.

So how does this work with Windows 10? The desire for current users of what Microsoft considers to be obsolete OSes to upgrade to 10 is obvious and the sweetener of getting it free is enticing, to say the least. So you've loaded your free upgrade, which as I understand it, valid for a year, but then what?

Windows 10 is built around the concept that it automatically updates itself in the background without any need for user intervention. So if, as we're led to believe, it's the last ever operating system that Microsoft are launching on the world, it has become a self-maintaining and self-upgrading platform and somewhere along the line Microsoft will be looking for a revenue stream.

The only place I can see this coming from is that at some time in the future the user will be required to pay for the maintenance and upgrades or be left behind and open to security threats and eventually an obsolete OS. So Microsoft have adopted what design engineers like my self are used too, that is, paying for maintenance and updating our CAD software via a licence fee on a per annum basis.

The other issu, and perhaps a more worrying than that of eventually make a regular payments for using this OS, is that of the misuse of users private data.

It seems that Windows 10 will be 'harvesting' a lot more private user data than most people realise. Besides the 'usual' access Microsoft has to your internet connection details, emails and location etc., they can also share your wireless network login details with your Facebook contacts and, so I'm lead to believe, connect your system to an unsecured wireless network without asking for your consent. All this without the user is even aware that it's happening!

One thing's for sure, I won't be using Windows 10 any time soon and if asked will recommend others avoid upgrading until we properly understand Microsoft's hidden agenda and future aims for accessing our money and private data.

David Wood

Open An Open Source Prezzie

Well, it's not far from Christmas, and I've been thinking about what to give my loved ones this year. I wasn't sure at first, but after seeing Microsoft giving away copies of Windows 10, an idea struck me. Why not just give away my own OS?

Of course, I don't have the mega-bucks of Microsoft, but I do have to a completely free, customisable operating system: Linux!

Yes, free your family and friends from the shackles of the big software companies, and set them on a journey of open source wonder. Surely that's better than just buying them a pair of socks again?

One caveat: it's probably not worth trying this with your grandchildren, because they'll still want the latest action figure or something.

Gregor Martin

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Steve Lowe, owner of the Game Over Cafe, owns more than 350 games systems

Play On At The Game Over Cafe

Anthony Enticknap took a trip to a recently opened internet cafe that serves up more than just coffee and web terminals

As I drive around the streets of Old Portsmouth, following the satnav on my phone, I notice how oddly busy this part of the city is for a Tuesday morning. People are milling around everywhere, congregating at road crossings and coming in and out of buildings. This, no doubt, has something to do with my close proximity to the University of Portsmouth, as well as the Portsmouth Museum.

Sitting in the car behind me is my seven-year-old daughter, brought along through the necessity of half term. Programmed into the satnav is 16 High Street, Portsmouth, located on a long road lined with

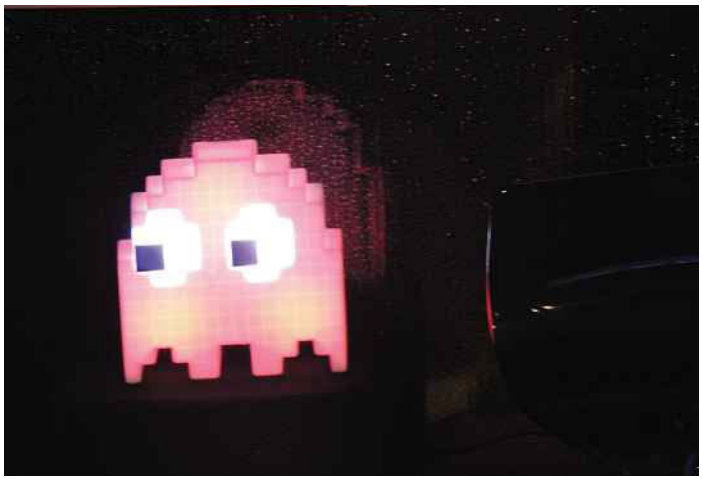
a mixture of elegant Georgian buildings and more contemporary constructions. And beneath one of the more attractive-looking buildings is our final destination: the Game Over Cafe.

Only recently opened, this is an internet cafe with a difference. As well as providing PCs with web access, and reasonably priced drinks and snacks, the Game Over Cafe is dedicated to retro gaming, so anyone who comes here can play some classic games, before perhaps heading to Facebook to tell everyone about it or just getting online to check their emails.

I've come here today not only to play games, but also to speak to the proprietor, Steve Lowe, a local resident and also the owner of the largest personal collection of games machines in the country. In fact, he has more than 350 consoles and games systems at present. Before opening the cafe, he kept these things at home in a dedicated display area of his garage, a photo of which now adorns the cafe's official business cards.

As I arrive, walking down the stairs to the basement in which the cafe resides, Steve is there, busily getting things in order.

We exchange hellos and shake hands, but before I've even asked a question, I pause to look around the room. Unsurprisingly, there are screens everywhere, but what's really striking is the decoration that lines the curved basement ceiling of the cafe. Using more than 5,000 tiles, Steve has created a retro-style mosaic of iconic Space Invaders characters, as well as displaying the name of the cafe. Looking around, I also notice by the entrance a display case, showing off a selection of original boxes for some of Steve's collection. In short, it looks the business.



I ask him how he got started with his collection, and he tells me that it all started with "a Vic 20, then after that it was an Atari 2600, with some games. And it really went on from there. As people were upgrading their machines, I'd either buy their old one off them or they'd just give it to me."

Today, many of those systems live in the cafe, but with such a huge collection, it's not possible to have them all available to play at once. Steve's plan, therefore, is to rotate them on a regular basis, so those who return to the cafe will get to try all kinds of new (or old, depending on how you look at) things.

"Using more than 5,000 tiles, Steve has created a retro-style mosaic of iconic Space Invaders characters"

But why let people play these systems at all? Why not just put everything in a museum, where they'd be safe? For Steve, it's all about getting people to actually interact with the machines and not allowing that would miss the point: "If I'd opened a museum, I'd need to have everything in glass cases" – not the kind of atmosphere he wanted to create.

Of course, letting the public come in and play with original equipment might seem risky, but Steve isn't concerned. "As people come in, I just say to treat it as if it's their own, and so far no one's been that rough with any of the equipment. They've all been very respectful."

Clearly, he wants the Game Over experience to be as hands-on as possible, and as I look around at the busy cafe, I see people of all ages, playing on all kinds of machines, some ancient and some relatively modern. I ask him which are the most popular. "Actually the younger generation seem to prefer the old 8-bit machines, the really basic games. But we've also got a PlayStation 3 and an Xbox 360, so children who are unfamiliar with the older systems have a comfort zone, then from that, they'll go on and use something else."

What, though, is the appeal of playing with these systems? With emulators being so easy to download and install, why do people like Steve, his customers and, indeed, me find ourselves drawn to playing these games in a setting like the Game Over Cafe?

"I think it's the social interaction with other people. With every station, I've done my best to have two controllers, so people can use the equipment together. And I've noticed especially with young children, one of them is on the machine and the other is on Wikipedia or Google, looking up more information about it or cheat codes, or whether there's a sequel. So there's the historical value as well."

That's an interesting notion, one that highlights the combination of old and new that's at the heart of the cafe. On one hand, customers have access to the internet, the very epitome of modern technology, while on the other, they're interacting with computers built before they were born. And these ancient systems are being fed into Windows 7 PCs, which output the signal to something that a modern flat-screen monitor can display, even allowing for gamers to record their sessions via built-in capture cards, probably for the results to be shared on YouTube or social media.

Steve may not have opened a museum, but it's not hard to believe that people who come to the Game Over Cafe are going to do more than just have fun.

"The younger generation are going to come away thinking 'That's what they had before now; this was the PlayStation 4 of their day', and they can see games in all their simplicity.

"A lot of games now tend to be simulations," Steve tells us. "While they're extremely complicated and very enjoyable to play, I think there's a lot to be said for something as simple as *Space Invaders* or *Pac-Man*. And you get the older generation who go away with a big smile on their face because it's brought back happy memories of what they used to play, who they used to play with."

I couldn't agree more, so I thank Steve and look for something to play myself. By this point, my daughter has found something to do while I was chatting, and I find her in front of a PlayStation 2, currently running a Rayman title – a name she recognises from more contemporary systems.

That's all well and good, but I'm far more interested in introducing her to the older equipment on offer. I see an Atari 2600 and consider starting her education there, but I figure that's a bit too basic to begin with, considering what she's used to.

Instead I opt for a Mega Drive, first to play *Sonic the Hedgehog* and then to have a go at an Alex Kidd title. There's also an old *Space Invaders* table that catches her eye, so we head over to that. As it turns out, it's been retrofitted with new hardware and also a multi-game software setup. We sit at opposites of the table and play *Breakout*. I win.

Eventually, we settle down in front of a Binatone TV Master 4 Plus 2 and play a bit of tennis and squash. As we sit in front of the large, modern flat screen, twisting dials to move two white lines up and down the screen, one thing in particular strikes me: it's incredibly hard. But difficulty level aside, it's actually a lot of fun, and even my daughter, more accustomed to Nintendo 3DS, Wii and Apple iPad, seems to enjoy it.

And that ultimately says it all. As I look at her, the light of the electronic tennis bats reflecting in her eyes, I again think about the combination of the old and new, and how with the right technology and in the right setting, our differences can be set aside for just a moment. Like the Windows 7 PCs sitting between the Mega Drives and the LCD screens, here we are, with a piece of electronics acting as a conduit between us, bridging a gap between the past and the present…

And then I pull myself out of this self-indulgent reverie and notice she's actually managed to score a couple of points while I wasn't looking, so I quickly get back to letting her know who's boss (yes, I'm one of *those* dads)…

For more information about the Game Over Cafe, and to book a session, head to **gameover.cafe**. mm

About Steve Lowe

- Steve, a Portsmouth resident, is also a software developer. "I started off programming in BASIC in 1982, and by 1984 I was programming in machine code, then in 1988 and 1989, I won the programmer of the year IBM competition. I wrote two pieces of software related to graphics and animation handling."
- His favourite games machine is the Vectrex, a vector-display-based console released in 1982.
- The item that Steve found the hardest to get was the Spectavideo SV-318, which he eventually had to import from the Netherlands.

About The Game Over Cafe

- Two-hour sessions cost £5 each.
- Soft drinks and snacks are available from just 50p.
- You can find the cafe at Basement, 16 High Street, Old Portsmouth, PO1 2LP
- Tel: 077 0105 9629
- E-mail: **booking@gameover.cafe**

Top 5 Things They Don't Make Like They Used To

Is it just us, or do things break more easily these days?

1 Washing Machines

Over the years, the prices of washing machines have dropped dramatically, to the point where you can now pick one up for just a couple of hundred pounds. Once reserved for the wealthy, today pretty much every household can afford to have one. Why the price drop?

Well, cheap labour and reduced cost of materials no doubt has something to do with it, but that's not all. The fact is that they're just not as well built as they used to be, which is why you get people still happily running washing machines from the 1950s, which show barely any signs of giving up, while the one you bought only last year could possibly break down at any time. With today's cheaper machines, they seem like a good deal, but you end up paying extra in the end. But who needs a washing machine anyway, when you have a perfectly good bath tub and a pair of hands?

2 Cars

We're not really car people at Micro Mart. For us, they're just a way to get us from A to B and something to hold the car stereo in. But even with our limited knowledge of motor vehicles, we can't help but notice how disposable cars are these days (much like everything else). It's not only their build quality that's different, though; modern cars don't really seem to have any character. When we see an old Mini, Beetle or MG go past, we think 'Hey, that looks cool'. And when characters in Hollywood movies fawn over a motor, it's always something like an old Chevy or Cadillac. Somehow, we can't see the stars of tomorrow getting all gooey eyed over an ancient Ford Ka or Hyundai Getz.

3 Light Bulbs

If you've ever been tempted by one of those new-fangled LED bulbs that you find in that random non-food bit in Lidl and Aldi, then you're probably aware that they're meant to last about 50,000 hours. Regular incandescent bulbs have an average lifespan of about 1,500 hours, so that's an astounding improvement. Indeed, you might see it as evidence of how technology has improved in this area. But we put to you a single particular bulb, known as the Centennial Light which, as the name suggests, has been lighting up its surroundings for more than a hundred years. In fact, this impressive bit of glass and wire, which hangs in a Californian firehouse, has been burning for around 113 years, and was made by the Shelby Electric Company.

To read more about the fascinating history of this bulb, check out this blog post: **goo.gl/0Tn14d**.

4 Mobile Phones

Who do you know who doesn't own a mobile phone? Probably not that many people, right? And you probably know at least one person who every year or so gets a new phone and then breaks it within about a month. Then when they eventually get another new one, they break that too. And if you're anything like us, when you see their poor, smashed-up handset, your mind instantly turns to the Nokia 3210 you used to have around 1999. You'll probably also recall wasting hours on it playing *Snake*, but more importantly, you'll remember that you once dropped it down a flight of stairs, then picked it up, to find it unscathed. In fact, you likely dropped it several times, but nothing could destroy it – not even that time you and a friend drunkenly threw it at a wall to prove its robustness (okay, maybe that was just us). Truly, it was a marvel, even if didn't have *Candy Crush* or Facebook (actually, possibly *because* it didn't have those things).

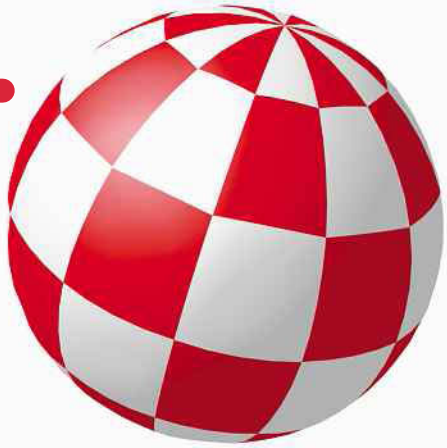
We're pretty sure this thing was made from the same stuff as Thor's hammer

5 Videogames

In more recent decades, games have become quite adult themed, and many of the big titles involve killing or horror. That's not to say that there aren't plenty of kid-friendly titles to play, of course, but the games business is not as innocent as it once was, and that's something we miss. Gone are the days when buying the latest releases could be achieved with pocket money; nowadays, you often need to spend around £50. And no longer do you get freebies taped to the front of magazines. Yes, you get free-to-play, but more often than not that equates to pay-to-win, and the fee you need to pay for victory is frequently unreasonable. Cynicism pervades almost every part of the videogames industry, which is a real shame.

On the plus side, though, *Fallout 4* is out soon, and that looks amazing.

The Amiga Part Two



Sven Harvey concludes this brief look at the Amiga platform's development from 1982 to present day

In 1991, Commodore UK asked Commodore International to produce a new cut-down Amiga using the latest cost-reducing technologies to enable it to offer a sub Amiga 500 machine. The smaller, C64-like concept was to have just the floppy drive, all the usual connectors and the ability to be expanded to have hard disks and the like added externally, with modest upgrades in a trapdoor, A500 style. Commodore UK knew the AGA chipset and the A1200 were on the way... and the A300 would continue to be a very low-end entry to the format beneath the A1200.

Unfortunately, Commodore Germany stuck its oar in and ended up making the machine too expensive to manufacture for the target price of £199.99 or less. CBM Germany's demands for a hard drive interface as standard and other changes over the original A300 concept resulted in a machine specified higher than the A500+ but with a cut-down case and no numeric keypad. Commodore International positioned the machine above the A500 and discontinued the A500+ as a result. Very early versions of the A600 (featuring the 2.04 Kickstart from the A500+ that doesn't recognise the on-board IDE hard disk interface, ironically) actually have 'A300' silk screened onto the motherboard.

AGA

Commodore's lack of any kind of plan, business or otherwise, had got it into trouble, and still rather than concentrating on its Amiga business, which was bringing all the money in, resources were still being ploughed into the development of IBM PC clones that were selling poorly. Money generated was being continually diverted away from the product range and projects underfunded and cancelled. Started in 1988, the AA and AAA chipset projects were starved of funding, and the feature set that was to be in the chipset we now know as AGA included far more advances, including in the sound department.

Originally based on a souped-up 'A3000+' the A4000 eventually arrived using PC cases Commodore's other hardware

The Amiga 300 600

68000 CPU
1MB ChipRAM
ECS chipset
Amiga OS 2.0

Looking cut down from the outside, this machine is actually slightly better specced than the A500+. With 1MB of ChipRAM as standard and the ability to upgrade to 2MB of ChipRAM via a trapdoor expansion, this was the first of the entry-level Amiga machines with a built-in IDE hard disk interface. The machine also featured surface mounting on the motherboard for the chips (apart from the Kickstart ROM). A PCMCIA-II slot replaced the Zorro/DMA expansion slot on the left-hand side compared with the A500 series. Unfortunately, this meant that expansion to add FastRAM, CPU boards and the like were seriously curtailed until companies started producing piggy-back units that clipped over chips on the motherboard. RAM could be added via the PCMICA-II slot, but it was typically slower than the RAM featured in FastRAM expansions for the other machines. The port did end up being used for external hard disks and CD drives on both the A600 and later A1200 machines that had the same port on its side.

The first A600 motherboards actually had A300 on them!

The Amiga 600 – not the machine people were waiting for

The FMV card actually came in a black and white box in the end, and had a rather industrial-looking metal casing to it

The AmigaOne X-1000 colour options

teams had wasted and the AGA chipset that wasn't quite what AA was supposed to be, having being cost reduced and fast-tracked for a 1992 launch. The A4000's arrival was a bit of a damp squib to many due to the rumoured 'AmigaStation' platform – the basis of which were the in-development AAA chipset and the original specifications AA was supposed to have.

However, the cost reduction and refocusing of the AGA chipset meant Commodore was about to surprise everyone. With the A4000 out, commentators were expecting the technology from within it to hit the entry level in 12 to 18 months. The truth was that by the time their comments hit the news stands in the Amiga mags, the A1200 had already arrived! At £399.99, making the A600 look distinctly underpowered, the A1200 was an immediate hit in the UK, with only stock availability over the Christmas 1992 period holding it back. By Christmas 1993, UK-manufactured A1200s were selling incredibly well in the productivity focused Desktop Dynamite pack at £349.99.

The new vice president of engineering at Commodore, Lew Eggebrecht, along with trying to push Amiga development in a more general form, also pushed the A100 project, formerly known as CDTV2 – which we now know as the Amiga CD32.

This A1200-based games console with a CD drive was developed with input from Psygnosis, which had shifted its Microcosm project from the CDTV to the new development, with the full knowledge of its new parent company, Sony Electronic Publishing (which we now know as Sony Computer Entertainment UK). Sony even provided the CD-ROM logic chips for the machine. With the chipset fall backs available as in the A1200, the CD32 could emulate the CDTV reasonably well, so most CDTV software would also run, giving the machine a small software base to start with.

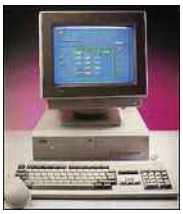
The CD32 was launched in the UK in September 1993, with Commodore UK being especially bullish with a billboard outside Sega's London HQ shouting "Amiga CD32 – to be this good will take Sega ages!" The machine sold very well initially – so well in fact that CD32 and CDTV software together accounted for over half of the software sold on CD-ROM over the run-up to Christmas 1993 – and this included Sega Mega CD, CDi and PC CD-ROM. However, Commodore was having problems in the USA regarding the console, as apparently it infringed on patents, and only a handful of units got 'grey' imported over the border from Canada.

Make what you will of Sony's involvement in the CD32, with the PlayStation arriving in Japan in December 1994 and in the UK in September 1995, with UK launch games being from Amiga developers…

The Amiga 4000

68040 CPU
6MB RAM (2MB ChipRAM, 4MB FastRAM)
AGA Chipset
Amiga OS 3.0

The AA chipset was rush-completed and cost reduced for a release in the A4000 in the late summer of 1992. Initially released with a 120MB IDE hard disk, a full 68040 processor running at 25MHz and 6MB of RAM at an eye-watering £2099, it was made available in a number of configurations with 040 and 030 processors, and varying hard disk and RAM specifications. The A4000 retained the Zorro III slots of the A3000 along with the video slot and became the basis of a new generation of Video Toasters. Commodore's final hurrah was the towered version of this machine, featuring a modular system of daughterboards, two video slots, both SCSI and IDE. This was the dogs unmentionables… which is why it's a shame that only around 100 to 200 hand-built Commodore A4000T units made it out of West Chester, and maybe less than that from Commodore Germany. The machine was resurrected by EsCom/Amiga Technologies with some minor alterations and a 68060 processor option and then by QuikPak in North America.



The Amiga 4000 wasn't quite what was expected after the AmigaStation rumours

Very few hand-built Commodore Amiga 4000T machines made it out of Commodore before the company collapsed

The Amiga 1200

68EC020 CPU
2MB ChipRAM
AGA Chipset
Amiga OS 3.0

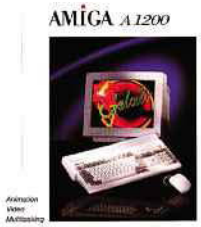
The proper successor to the Amiga 500, the release of which surprised everyone, exposing the A600s true origins in a way, while also explaining why the AGA chipset had been cost reduced. Someone at Commodore International had suddenly realised how much money the entry-level Amiga machines had been pulling in from Europe especially in the form of the A500 and knew it needed a proper replacement as sales showed early signs of decline. It wasn't until after Commodore went bankrupt, however, that people realised what potential hid in this fantastic machine.

The machine, like the A600, featured an internal IDE interface to allow a 2.5" IDE hard disk to be installed and a PCMCIA-II slot. However, the connector under the trapdoor on the bottom of the A1200 was a full-blown expansion connector allowing the interfacing of everything from extra RAM to a new CPU on a card to graphics cards and even Zorro break-out boards. The motherboard also included a connector to allow the machine to be expanded from 1MB of ChipRAM to 2MB with a battery backed-up clock. However as all A1200s shipped with 2MB of ChipRAM and most expansions using the trapdoor included a clock, this 'clock port' wasn't officially used. Instead it turned into a geek port, with companies releasing expansions including soundcards and USB interfaces!

Following Commodore's bankruptcy and purchase by EsCom, Amiga Technologies rereleased the A1200 virtually unaltered (save for a dodgy floppy drive) at more than Commodore was selling it for, but it came with AmigaOS 3.1.

This was the last of the true home computers, with the last A1200HDs rolling off the production line at subcontractor, Solectron of France, in 1996 just as EsCom fell into bankruptcy.

Commodore's true successor to the A500 – The Commodore Amiga 1200



EsCom rereleased the A1200 virtually unchanged through its Amiga Technologies subsidiary

With no USA release, the CD32 couldn't possibly be the saviour Commodore so desperately needed, and even as it tried to get the A4000T out the door and get on with development, the company filed for Chapter 11 in April 1994.

Commodore's Aborted Future

Due for release in a replacement for the A1200, AA+ was to bring some of the features back that should have been in AA/AGA. Along with AAA, the AA+ project was dropped in 1993

The last of the true home computers, many of which were built in the UK and can be upgraded beyond the wildest dreams of its designers

as Dave Haynie worked on the Acuator, the architecture that was to be used for the move to the new 64-bit Amiga Hombre chipset, being designed by Dr Ed Helper, based around the 64-bit Hewlett Packard PA-RISC 7150 processor, with features and abilities in the same area as the MIPS-based original PlayStation. In fact, the company had finally come to the conclusion that developing the Amiga was its best bet. The primary target for the technology was a project referred to as the CD64. Shame it was too late.

The Amiga CD32

68EC020 CPU
2MB ChipRAM
AGA Chipset + Akiko
Amiga OS 3.1

Commodore saw where the market was going, and learning from the missteps in the form of the CDTV and the C64GS, it created a pure games machine from the technology in the A1200 – just with a little bit of the AA+ chipset added in the form of the chunky-to-planar converter chip Akiko. Shipping with Kickstart 3.1, the CD32 had a dual-speed CD-ROM drive, two joypad ports, an aux/keyboard port, composite, RF, S-video and audio connectors, along with a great big expansion port, with space in the casing above it.

That expansion edge connector had all the qualities of the A1200s trapdoor and more, and allowed the machine to be given a range of extra abilities. The only official expansion to be released was the MPEG card, which gave the CD32 the ability to play VideoCDs, and though Commodore UK had further plans, it fell to other companies to offer expansions when the management buyout failed. Expansions allowed the addition of a full set of ports as on an A1200, more RAM and hard disks. Even processor upgrades were made available, along with power supplies to power it all.

Commodore's most successful pure gaming machine, the Amiga CD32

The FMV module add-on gave the CD32 MPEG decoding ability, and thus the ability to play VideoCDs

The Unreleased Machines

Amiga Technologies had three prototypes of the Mind Walker aka the Amiga Walker, which apart from looking a bit like a vacuum cleaner, was supposed to include a 68030 processor and CD-ROM drive as standard, as well as offering an expansion bus to allow extra modules to be placed into the machine between the base (with the motherboard) and the top (holding the drive cage). The idea was that multiple modules could be added with extra capabilities, turning the machine into a tower. Unfortunately, the prototypes were as far as the Walker went.

The Amiga MCC (Multi-media Convergence Computer) was the concept for the TransMeta processor based AmigaOS 5 machine that Amiga International was developing in 1999 when it was under the Gateway umbrella and being run by Jim Collas. With the code-morphing processor allowing some fascinating emulation possibilities and a new AmigaOS based on QNX (and later moved to a Linux kernel). It was this that later morphed into the abandoned AmigaSE OS at Amiga, Inc. The MCC project came to an end when Jim Collas departed the company, and it was buried by the time Gateway sold Amiga to Amino at the end of the year, which resulted in the creation of Amiga, Inc.

The EsCom/Amiga Technologies Mind Walker or Amiga Walker was universally derided for looking like a vacuum cleaner... or Darth Vader's helmet

Amiga in name, the MCC would have featured a TransMeta CPU and Linux OS kernel, had Amiga International/Gateway ever released it

There was a lifeline: Commodore UK, the last standing remnant of the global company that had not gone bankrupt yet. Joint MDs, Colin Proudfoot and David Pleasance, were mounting a management buyout of Commodore International, to create a new Amiga company in the UK. They intended to license out trademarks for various goods, retaining Commodore's Amiga engineers and getting Hombre to market, while at the same time refreshing the A1200 and CD32, and even getting the CD32 into home hi-fi setups. Unfortunately, the project was knobbled in a very underhanded way (lying to Commodore UK's backers) by growing German PC company EsCom, which was desperate to get its mits on the Commodore brand.

Post Commodore

After Commodore's failure, the Amiga brand went to EsCom/Amiga Technologies, which barely lasted a year, and then to Gateway, whose Amiga International only really added the development of AmigaOS 3.5 to the format, with many plans never coming to fruition.

Its main idea for a Linux-based AmigaOS, turned into the Intent-based OS that would have been AmigaDE from Amiga, Inc. – a company that began life as Amino, and bought the rights and certain patents from Gatweay.

Amiga, Inc. licensed Haage and Partner to develop 3.9 (they had also subcontracted the work on 3.5). After the release of 3.9, Amiga, Inc. licensed the development of Amiga OS 4 to Hyperion Entertainment, and after several legal issues and legal corporate shell games, with some associated companies falling by the wayside, we are now in a position where Commodore is separate from Amiga, Inc., and AmigaOS and the AmigaOne are separate from Amiga, Inc.

It's further complicated by the fact that the rights to AmigaOS 1.0-3.x reside with Cloanto after the expansion of its original licensing arrangement for the official emulation package, Amiga Forever. Cloanto now can sub-license the OS and, indeed, manufacture Amiga Workbench disks and Kickstart ROMs, as well as providing images for emulation.

Hyperion Entertainment now owns the rights to Amiga OS 4 and onwards, and it has the right to sub-license the boing ball and allow the use of the AmigaOne name on machines that primarily run AmigaOS 4.x and onwards. This has allowed current hardware developers ACube Systems and A-Eon Technology to develop new hardware running the newest version of the AmigaOS. AmigaOS 4.2 is currently in the works and is due to support the multi-core 64-bit AmigaOne X5000 machine from A-Eon.

So that's where we are today. However, as you can probably tell, there's much more detail to this story, and you can read more every other issue on our Amiga Mart page. **mm**

AmigaOne

Amiga, Inc. licensed the development of the classic AmigaOS and port to PowerPC to Hyperion Entertainment, and alongside this PPC hardware was under development in the form of the AmigaOne 1200 and AmigaOne 4000, by EyeTech (UK) and Escena (Germany).

These were essentially secondary computers that would interface with A1200 and A4000 motherboards, offering PowerPC capabilities while enslaving the basic human interface and I/O functions of the older machine, and offering 100% backwards compatibility. The tech fell through, and a fallback plan of using adapted PowerPC evaluation boards as the basis for computer systems came to the fore. This resulted in the AmigaOne SE, AmigaOne XE and Micro-A1 motherboards and computers that allowed Hyperion Entertainment to develop the early versions of AmigaOS 4.

Corporate shenanigans put pay to further development, but based on these, ACube Systems of Italy and then A-Eon Technology created hardware meant for AmigaOS 4 – the main products of note being A-Eon's AmigaOne X-1000 and Acubes's AmigaOne 500. A-Eon's up coming AmigaOne X-5000 series will carry on the development further.

A customised early AmigaOne XE-G4, featuring a 933MHz G4 PowerPC processor (often underclocked to 800MHz)

The most recently released machine, Acube's AmigaOne 500

Code With AI2

Where Am I?

Build an Android location mapping app with David Briddock

Recently we've used the speech recognition component of AI2 to create memos and provide multi-language translation. This time we'll take an introductory look at how to access GPS sensor data and plot your current geo-location on a map. Remember, all you'll need to play along is a Windows/Mac/Linux PC, web browser and Google account. You'll need access to an Android smartphone or tablet with GPS functionality to test this app.

What We'll Learn

These days the majority of smartphones and tablets incorporate a GPS sensor. This sensor communicates with the global positioning satellite system to evaluate the device's latitude and longitude coordinates. With AI2 and the location sensor component it features, we'll obtain the current geo-coordinate data values and then we'll pass this data onto a mapping service, so we can visually see our position on a map.

Let's get started.

Starting AI2

Firstly, in your browser of choice, navigate to the AI2 home page (which you'll find at **ai2.appinventor.mit.edu**) and sign in with your Google account.

We need a new project so, in the Projects menu, select the 'Start new project' option and give it a meaningful name, such as 'MMLocation'.

Screen Properties

We're automatically taken to the Designer View where there's already a component called Screen1. We'll drag and drop the other components onto this screen.

On the right is the Properties panel for the currently selected component. In this panel ensure the AppName field is set to 'MMLocation', then set the Title to 'MM Location', the AlignHorizontal to 'center' and the ScreenOrientation to 'Portrait'.

Now we'll add some screen components.

> **"We want to display a map after a MapButton click event"**

Visible Components

Let's start with a header. In the left hand Palette panel open the User Interface group, grab a Label component and drop it onto the Screen1 area in the Viewer panel.

With Label1 selected use the Property panel to set the FontSize property to 24.0, click on the FontBold checkbox, set the TextAlignment to 'center' and set the Text to 'Where Am I?'.

The geo-coordinates will also be displayed in a label. Back to the User Interface group, grab another Label and drop it onto Screen1 just below the last label. With this label selected rename it to 'LatLong', then set the FontSize to 20.0, the TextAlignment to 'center' and the Text to '0,0'.

Now for the map button. Go back to the User Interface group, grab a Button and drop it onto Screen1 just below the LatLong label. With this button selected rename it to 'MapButton', then set the FontSize to 20.0 and the Text to 'Show on a Map'.

Until we have valid geo-coordinates they can't be shown on a map. So for now we'll disable this button by removing the tick on the Enabled checkbox.

Invisible Components

We also need a couple of invisible components, which will appear in the Non-Visible Components area under the screen. From the Sensors group, grab a LocationSensor component and drop it onto the Screen1 area. Then set the DistanceInterval property to '1' and TimeInterval to '1000'. These settings will help speed up the acquisition of GPS position information.

Now go to the Connectivity group, grab an ActivityStarter and drop it onto the Screen1 area. The ActivityStarter is a

very flexible component that interfaces directly with internal Android services and apps. However, we must set its properties accurately or it won't work correctly.

With the ActivityStart1 component selected set the Action property to 'android.intent.action.VIEW', then the ActivityClass to 'com.google.android.maps.MapsActivity' and finally the ActivityPackage to 'com.google.android.apps.maps'.

GPS Event

It's time to start coding, so click on the Blocks View button you can see located on the green bar.

The first task is to handle a location changed event, which is fired when we have GPS coordinates. From the LocationSensor1 component grab a brown 'when LocationSensor1.LocationChanged' block and drop it into the coding area.

First we'll display the comma-separated coordinates. Grab a green 'set LatLong.Text to' block from the LatLong component and drop it inside. As we're combining the latitude and longitude into a single text string we need a magenta 'join' block from the Text group. Snap it into place then use the small blue button to add a third string item.

Next hover over the 'latitude' attribute for the outer brown block to see the required 'get latitude' block. Snap this into place as the first string value. The second string value is just a simple text block with a comma character. And the last is a 'get longitude' attribute block from the outer brown block .

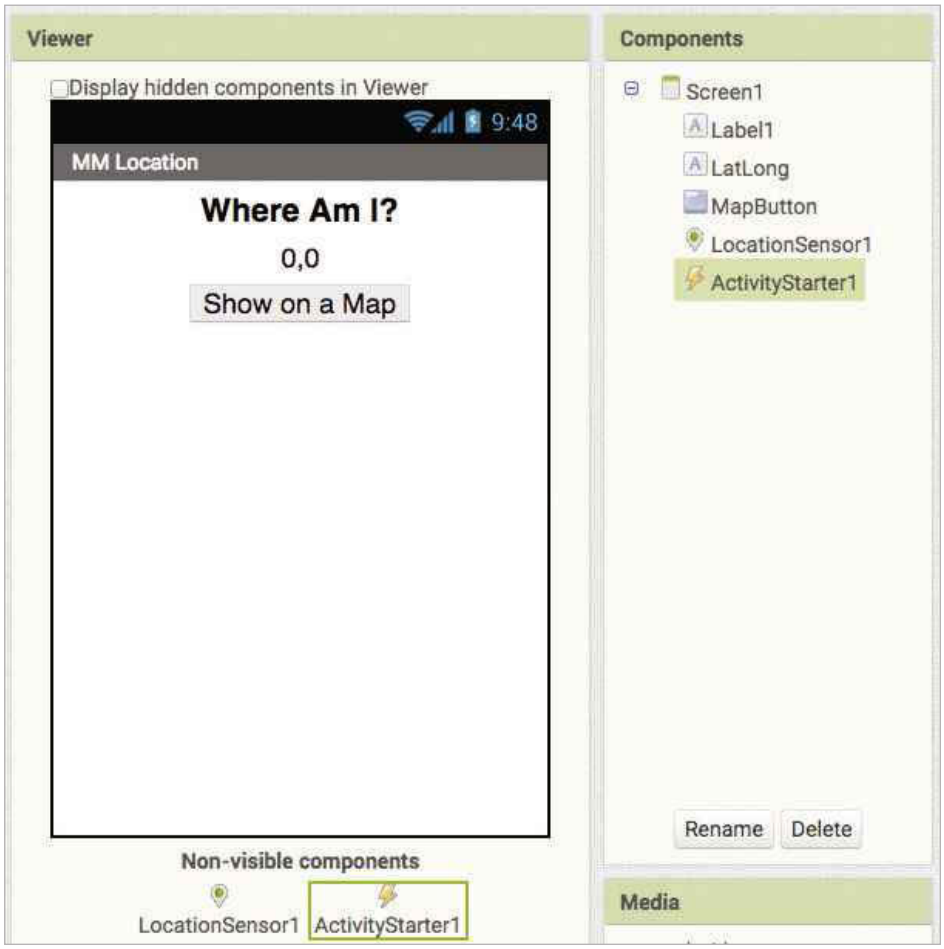
Now we have valid GPS coordinates we can enable the map button. Grab a green 'set MapButton.Enabled to' block and snap it underneath the last one. Use a 'true' block from the Logic group to set its value.

Map Display

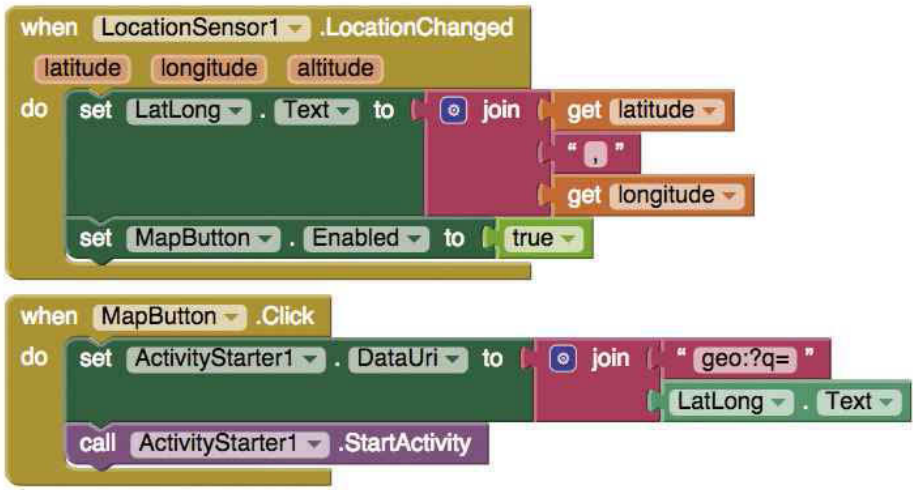
We want to display a map after a MapButton click event. From the MapButton component grab a brown 'when MapButton.Click' block and drop it into the coding area.

From the ActivityStarter1 component grab a green 'set ActivityStarter1.DataUri to' block and drop it inside. The value is set with a magenta 'join' multi-part text string component from the Text group. Snap this at the end of the ActivityStarter1 green block.

Now set the first string item to 'geo:?q='. Then set the second string item with a light green 'get LatLong.Text' block. To initiate the activity we need a purple 'call ActivityStarter1.StartActivity' block. Snap it just under the last green block.



AI2 designer view



AI2 blocks view

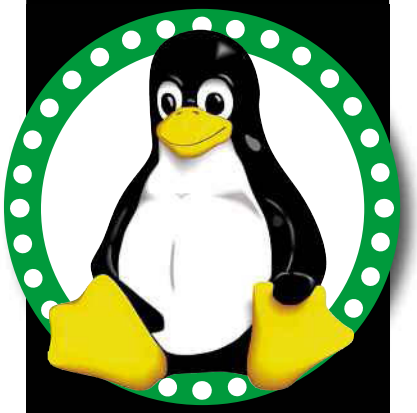
That's all the coding done. Ensure the warning and error counts in the bottom left corner are both zero then carefully check your code against the Blocks View image.

Testing

We can't use the Emulator to test, as it cannot imitate a GPS sensor. Instead test with the AI Companion App installed on an Android device (as we discussed earlier in the series). Side-load the finished app onto an Android device (**goo.gl/ZMKgAe**) so it's available the when you out and about.

Going Further

This useful app could be enhanced by storing a specific location, then later displaying a route map from our current position to the stored location. So that's just what we'll add next time. **mm**



Kernel 4.3 Officially Released

Onward and ever upwards for Linux

David Hayward has been using Linux since Red Hat 2.0 in schools, businesses and at home, which either makes him very knowledgeable or a glutton for extreme punishment

I was going to make this week's Linux News report about the Twitch collaborative installation of Arch Linux, but (and I'll freely admit this here) I have absolutely no idea what Twitch is and even less interest in watching someone install a copy of Linux. I can do that happily on my own.

Maybe it's an age thing, I just don't 'get' the whole concept; I've only just got my head around watching YouTube videos longer than three minutes.

> **Kernel 4.3 looks to be the business for the modern PC**

Anyway, in other Linux news, kernel 4.3 has finally been released. This version isn't an LTS, so there are going to be fewer updates for it further down the line, but it's a good stopgap until version 4.4 LTS is released, and at least you get to play around with the newer features and test it out.

As usual with a new kernel release, Linus Torvalds had something to say:

*"So it *felt* like the last week of the rc series was busy, to the point where I got a bit worried about the release. But doing the actual numbers shows that that really was just my subjective feeling, probably due to the kernel summit and travel back home from Korea. It wasn't actually a particularly busy week, it's just that the pull requests were more noticeable in the last couple of days.*

"We had a network update and a late fix for a x86 vm86 mode bug introduced by the vm86 cleanups, but other than that it's just a collection of various small oneliners all over. Ok, the vm86 mode thing was a one-liner too, it was just slightly more nerve-wracking because it looked scarier than it was before people (Andy) figured out what was going on.

"The changes from rc7 are dominated by the network stuff, but as you can tell from the appended shortlog it's not anything particularly scary.

"So on the whole, this remains a rather calm release cycle until the very end. And with the release of 4.3, obviously the merge window for 4.4 is open and let's keep our fingers crossed that that will be an equally calm release. Especially since apparently Greg has decided ahead of time (as an experiment brought on by discussion at the kernel summit) that 4.4 will be another LTS release."

Improvements

Kernel 4.3 has some improvements that are worth looking into for those who are running Intel's latest Skylake processors.

There have been some issues in the last revision with Skylake processors, most notably the graphics side of things, but this final release appears to have done away with the bugs.

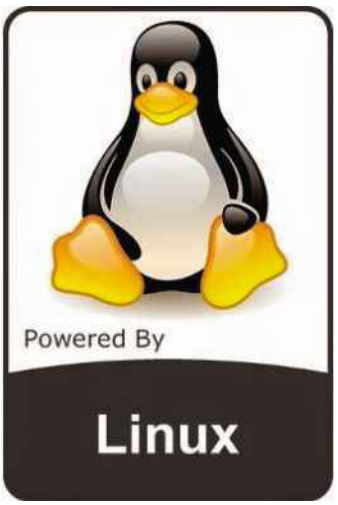
There have also been some improvements to Nvidia graphics card drivers – just in time for the release of the Valve Steam Machines – and better support for OpenGL on guest virtual machines.

Worth a go

Overall, kernel 4.3 looks to be the business for the modern PC. So it's worth an installation if you're capable of compiling from the source. Or you could hang around until your favourite distro makes it a little easier through the update system.

Either way, things are moving ever onwards.

Linux kernel 4.3 is out and ready for active duty



The Changing Face Of Finder

Why did Apple transform Susan Kare's minimal icon into a goofy piece of cartoonish art?

It's safe to say that in the 1980s, computers didn't have a reputation for being friendly. Even those that on the outside looked relatively harmless – such as the ZX Spectrum – were lumbered with arcane command-line interfaces. You needed to learn how to interact with these machines before you could figure out how to do anything else. For many, it was like learning another language – and a world away from the intuitive technology we enjoy today.

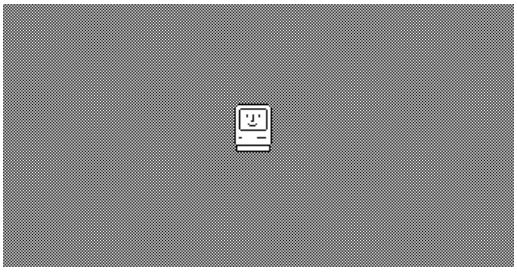
Arguably, it was Apple that transformed the nature of computing. Jobs and co. might have pilfered some bits of the Mac OS interface from Xerox (although less than you might imagine when reading certain reports), but the success or failure of any system lies in its implementation. You can have the best features in the world, but they're no good if people cannot figure out how to use them – or won't even try in the first place.

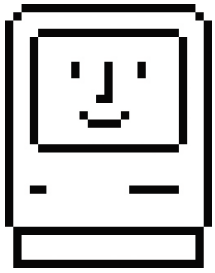
Rather than the user typing in commands, interaction with Macs relied on an interface often derided at the time (windows, icons, menus, pointer) that nonetheless ended up being ubiquitous until the rise of touchscreen mobile devices. But any success in usability wasn't solely down to the software, which was ultimately a slightly more flexible and user-friendly approach to the virtual desktops Xerox had been working on. Instead, Apple thought about approachability in a rather more holistic manner. The Mac's form factor certainly helped; the original Mac was about as far from intimidating as it's possible to be. But also there were small yet important details, such as the Happy Mac icon that appeared when you booted the computer up.

This icon was designed by Susan Kare, who was responsible for many other interface elements found in the original Mac OS, many of which still survive in various forms. For example, her pioneering work on MacPaint provided a blueprint and language for creative tool icons that numerous apps use to this day. However, the Happy Mac was about more than immediacy and familiarity; it was about giving the Mac a personality. Reportedly inspired by the popular round smilie face, this welcoming piece of pixel art had a warmth that became part of the Mac itself, even synonymous with it.

Perhaps that's why there was outrage when Apple decided in OS X 10.2 to ditch the Happy Mac from the start-up sequence, replacing it with a simple but bland Apple logo. Corporate branding and a desire for cold minimalism won out, but the Mac's smile nonetheless lived on in the face of Finder, the OS X file manager. It was, of course, a far more detailed, textured interpretation of Kare's original art, not least given that Apple's icon dimensions had swelled to a gargantuan 1024 x 1024 pixels. Kare's original was a mere 32 x 32.

With OS X Yosemite, Finder's face was again refreshed, and there was further outrage. I was among those miffed that Apple had seemingly reworked Finder in Fisher-Price form. Like many of its other icons, it seemed gaudy and contrary to Apple's desire for sleek minimalism elsewhere. But when you think about this design refresh in the context of Apple's entire history, it makes a lot of sense. The Happy Mac was always about being friendly and welcoming, and the new Finder icon design is superior in that regard. Finder, then, remains the 'human face' of computing, even if it sometimes irks the old guard. It's a reminder that Apple creates computers 'for the rest of us'. And although the new Finder might be more cartoonish and a touch on the goofy side, its soul remains intact.





A smiling icon might seem twee, but it's a reminder of the Mac's desire to be the human face of computing

Craig Grannell is a writer, designer, occasional musician and permanent loudmouth. He's owned Macs since 1996, when Apple was facing certain doom, and is therefore pleasantly surprised by its current success. Find **Craig** on Twitter at **@craiggrannell**

Chrome Alone

Ian McGurren looks at the future of Google's oddball operating system

Chrome OS – it's the operating system that's not quite an operating system in the traditional sense, but which has found favour with those who need a light OS for simple, fuss-free, safe computing. Could its time be coming to an end, though? Is Google going cut its OS portfolio by one?

Chrome OS is a bit of a strange operating system. Although it's based on Linux, it has more in common with mobile operating systems than the traditional behemoth operating systems – working with apps, restricting access to the filesystem and so on. Initially, Chrome OS was little more than its browser namesake, Google's Chrome browser, loaded into a PC. It was this barebones approach that was both its appeal and its downside. If you wanted a machine that could get you on the web and not have to worry about viruses and such, Chrome OS offered this but nothing else. Great if you want to just browse the web or undertake some basic tasks such as Google's productivity apps, but kind of limited beyond that. It's for this reason, however, that Chromebooks have found favour in places of education. Easy to use, little administration needed and the likelihood of problems in use are small.

Chrome OS itself can run on different machines, though you'll need to compile it from the open source Chromium OS version before you can install it. Even this is with mixed results, so really if you want to try Chrome OS, you can do it the 'cheap' way (restricting yourself to doing everything in the Chrome browser will give a fair indication of what to expect) or the 'proper' way, and buy a Chromebook or Chromebox. These are the devices released by big name manufacturers such as Dell, Samsung and Acer that run Chrome OS out of the box. The Chromebooks are cute little laptops in the Macbook Air vein, but for a far smaller outlay (most Chromebooks are around £200 or less). Not all were cheap and cheerful, though, as Google's Pixel Chromebook showed. Taking the Chromebook to its very limits of class, the Pixel has design and hardware to give the Macbook Pro Retina a run for its money, or at least it would have done had it not ran Chrome OS. For the money (well in excess of £1,000), the Pixel seemed a very strange beast. You'd need to really, really love Chrome OS to warrant that kind of purchase.

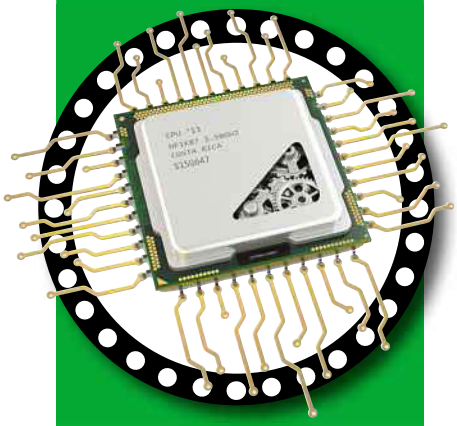
The Pixel gained a revision in 2015, but things changed with the announcement of the Google Pixel C. What created waves was this Pixel, although pitched as a productivity device, runs Android 6.0, not Chrome OS. Google hasn't so blatantly pitched its ostensibly mobile OS to the desktop before, mainly as it was the preserve of Chrome OS, so this was seen as a sea change. Later, Alphabet's Eric Schmidt spoke of folding Chrome OS into Android. On the face of it, this was in line with what Google had always said about the merging of Chrome OS and Android, but here the inference was closer to Android becoming dominant, instead of something more of an equal combination.

> **“For now, Google remains publicly committed to Chrome OS”**

For now, Google remains publicly committed to Chrome OS. Chrome the browser is still one of the most popular on the planet, and there are still Chromebooks being released. But while it has had a good run, the nature of desktop computing is undoubtably changing. Proof of device convergence, such as Microsoft's Continuum for Windows Phone, show that there don't need to be separate devices for the hand and the desk or even for the wall. This subtle change seems to acknowledge that Android may be better placed to be Google's OS for the phone, the tablet, the TV and now the desktop, that Chrome OS may ever be.

Ian is a professional IT analyst, a semi-professional writer and a pretty amateur electronic musician. He likes gadgetry and loves making gadgets do things they were never designed to do

Money On AMD's Mind



Andrew Unsworth laments AMD's recent financial results, then responds with blind optimism

Those of you who bought last week's Micro Mart (MM1386) will no doubt have read Mark Pickavance's excellent and informative feature on the state of AMD's finances ('AMD: Losses Mount'). In it, Mark talked through some of the numbers published in AMD's third-quarter financial results (**tinyurl.com/p5qtxx4**) and mentioned that although the comany's $1.06bn revenue for that quarter was higher than expected, it still wasn't enough to prevent a $197m loss. Even worse, Mark reports that the loss is the latest in a continued sequence of losses accrued over many years.

This is disappointing news, especially so if you're an investor, but it's still hard to hear if you're a computing enthusiast. The industry needs healthy competition, and if AMD can't spur Intel into competitive action with innovative chips, then desktop computing hardware stagnates. Of course, AMD is more than a CPU manufacturer, as it's also one of the two main players in desktop graphics.

Its latest range of graphics cards, the 300 series, provides good performance for each segment and budget. However, the range is just aggressively competitive in terms of performance and price; it doesn't contain anything to give Nvidia's line-up a painful and bloody nose. AMD's 300-series graphics cards give AMD fanboys a reason to continue buying AMD, when it should be giving Nvidia fanboys a reason to switch tribes instead.

All this may sound a little negative, but it's more of a lament. We need an AMD that pushes boundaries and excites, not an AMD that gingerly snaps at the heels of other manufacturers. Mark writes that AMD hopes to release its first FinFET node chips in the second half of 2016, and this will herald an age of smaller-process chips for AMD.

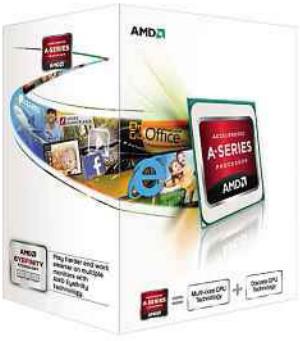
This is good news, but it doesn't help AMD in the meantime. Some commentators have complained that AMD does itself no favours by being the budget CPU brand, but to make money now, I see nothing wrong with convincing those looking to keep desktop PCs alive, or build new ones, to save money and buy AMD. Any money saved on a motherboard and CPU can be spent on another component such as a graphics card or be put towards the ever-increasing expense of living.

Self-builders are just one part of AMD's CPU customer base, so maybe a greater engagement with OEMs and the sponsoring of attractive and more living-room-friendly chassis designs would have more non-enthusiast PC buyers opting for AMD-based systems. A bit of aggressive marketing to the general, non-enthusiast public really wouldn't go amiss. Everyone's heard of Intel, but how many know about AMD?

I've always waxed lyrical about AMD's APUs, because they provide an excellent blend of value and performance. Although I have very powerful PCs for music production/DJing and gaming, for many years my main work PC was based on an AMD A4 chip. The A4 is a very basic chip, but I paired it with an SSD to create a snappy, responsive computer.

Right now, you can buy an AMD A4 6320 from **www.scan.co.uk** for just £31. Pair that with a £40 motherboard and a £55 240GB SSD and you have a decent base for a computer. Stocking up on cheap AMD components now isn't enough to help AMD in the long term, but every little helps. If AMD pushes the value proposition then it can cover the costs of designing and implementing something more exciting or a CPU that competes convincingly in the mobile market.

Hopefully, with a bit of effort and innovation, AMD can pull itself out of the financial doldrums. I'm sure all of us old enough to have enjoyed computing in the 90s remember AMD fondly, and I'm also sure none of us wants to see it go bust.



Andrew Unsworth has been writing about technology for several years, he's handy with a spanner, and his handshaking skills are second to none

Ryan Lambie has loved videogames since he first stared up in awe at a *Galaxian* arcade cabinet in his local chip shop. 28 years on, Ryan writes about gaming for Micro Mart. He's still addicted to chips and still useless at *Galaxian*

Jason Lives!

Step into the murderous bulk of Jason Voorhees – or his fleeing victims – in the forthcoming survival horror game, Friday The 13th. Just don't say "I'll be right back..."

This week, checks out a new game based on the Friday The 13th film franchise, and looks at the recent changes to Quake Live...

Plug & Play

Typically shunned by critics yet reliably popular with horror fans, the *Friday The 13th* film series has haunted cinemas since 1980. The franchise's slasher villain, Jason Voorhees, isn't a stranger to the realm of videogames, either; his first foray (predictably called *Friday The 13th*) arrived in 1985 for the Commodore 64 and ZX Spectrum. Like most entries in the movie series, it didn't exactly endear itself to critics. Nor did the 1989 spin-off for the Nintendo Entertainment System, which is widely regarded as one of the worst games ever made for that console.

We remain optimistic, however, about Jason's latest venture into gaming. This is partly because *Friday The 13th: The Game*, as it's now called, didn't actually begin life as a movie tie-in; rather, it was a concept called *Slasher Vol. 1: Summer Camp*, dreamed up by a small developer called Gun Media. Everything changed when Sean S. Cunningham – director and producer of the original *Friday The 13th* – got wind of the project and offered the studio the licence in late 2014. So, what began as a game inspired by classic (and not-so-classic) slasher horror movies is now officially part of the fold.

Another reason to be optimistic about Gun Media's slasher game is that it's set to offer a quite fresh spin on the now well-established "asymmetric multiplayer" subgenre popularised by such games as *Left 4 Dead*. In other words, players can either choose to take on the role of one of seven camp counsellors attempting to survive the night at Camp Crystal Lake, or they can become Jason himself, stalking his victims like the Grim Reaper in a hockey mask.

As you might expect, Jason's extremely difficult to defeat, so the wiser tactic for the counsellors is to either hide or try to find a means of escape. This can be achieved by finding and repairing a phone line, allowing you to call the police, or alternatively by finding a vehicle and getting the heck out of Crystal Lake. As for Jason, the goal's simple: kill all the puny counsellors before the 15 minute bout is up.

It's a simple yet potentially effective premise, and the game, currently seeking funds via Kickstarter, has enjoyed a warm response so far – at the time of writing, it's already close to acquiring its $700,000 minimum goal. *Friday The 13th: The Game* also benefits from the addition of Kane Hodder, returning to provide the motion-captured movements of Mr Voorhees, and special effects artist Tom Savini, who's overseeing the design of the game's gore scenes.

With the possibility of a single-player campaign and other additions (including one Pamela Voorhees) if certain stretch goals are reached, it's just possible that Gun Media will achieve what other developers have so far failed to do: deliver a decent game based on the perennial horror favourite.

Friday The 13th: The Game is currently scheduled for release in October 2016.

Online

Even though it's passed through the hands of several developers over its 21-year history, the *Tribes* series has remained a reliably entertaining multiplayer shooter series. The most recent entry, *Tribes: Ascend*, was released in 2012 to a hugely warm reception, and while developer Hi-Rez Studios set the game aside to concentrate on its MOBA *Smite* for a couple of years, it's now put a small team back on *Ascend*'s case again.

To celebrate the *Tribes* series' long history, Hi-Rez has made every game in the series available as a free download.

▲ *id Software's reconfigured Quake Live as a paid-for game, with its stats and friends lists reset in the process. Needless to say, not all fans are pleased...*

This means you can now get your hands on everything from 1994's *Earthsiege*, via 1998's *Starsiege: Tribes*, to 2004's *Tribes Vengeance*. Due to their age, some of the games may need a bit of tinkering around with to get working, but for those with fond memories of the series, it's a canny move from Hi-Rez; after all, reminding players how much fun the earlier games were is a great way of coaxing them back into the *Tribes: Ascend* fold. The publicity surrounding the downloads could also see players flocking back to play, say, *Tribes 2* for the first time in years. You can find links to all the games at **www.tribesuniverse.com**.

While Hi-Rez has made those games available for free, id Software have gone the other way. Its shooter *Quake Live*, which since its launch in 2010 has offered a free-to-play, browser-based version of *Quake III Arena*, will now have to be purchased. "Today marks a new beginning for *Quake Live*," id Software announced on the 28th October.

"By retiring our services and subscription service, all players now have the same benefits and features in-game," id wrote on *Quake Live*'s Steam page. Unfortunately, the move also means that players' existing stats and friends lists have been wiped. "They reset my stats from 2009!" wrote one player on Steam. "You absolutely, 100%, undeniably destroyed THE greatest FPS ever created," another raged.

As part of the move, id has also abandoned *Quake Live*'s original launcher; the game is now being sold via Steam for the not-unreasonable sum of £6.99. Those who already have *Quake Live* installed on Steam can rest assured that they can carry on playing without having to pay.

This is the latest phase in *Quake Live*'s evolving story; back in 2009, id's original plan was to fund the shooter exclusively through advertising. When that failed to pan out, an optional subscription was introduced. Needless to say, not all fans are happy about the move; will the ageing *Quake Live* survive this latest twist in its story? Only time will tell, but you can find out more about the changes, and the game itself if you like, over at **www.quakelive.com**.

Incoming

As regular readers may have gathered, we're rather looking forward to EA DICE's action reboot, *Mirror's Edge: Catalyst*. The game aims to refine the free-running thrills of the first game, while improving on its more frustrating elements – most notably, its somewhat uneven hand-to-hand combat segments. Unfortunately, the studio's ambitions for the game mean that its release is being pushed back by about 12 weeks.

"We will use these few extra months to make sure that when you step into the massive City of Glass and experience the rise of Faith, it's as entertaining, impressive, and memorable as it can be," EA has said.

Mirror's Edge: Catalyst is now due for release on the 24th May.

▲ *Originally set for release in February 2016, the much-anticipated parkour-em-up sequel Mirror's Edge: Catalyst is now scheduled for the 24th May*

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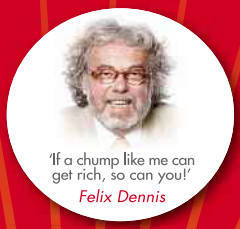

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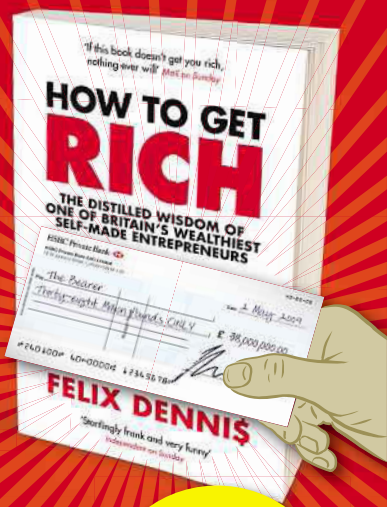

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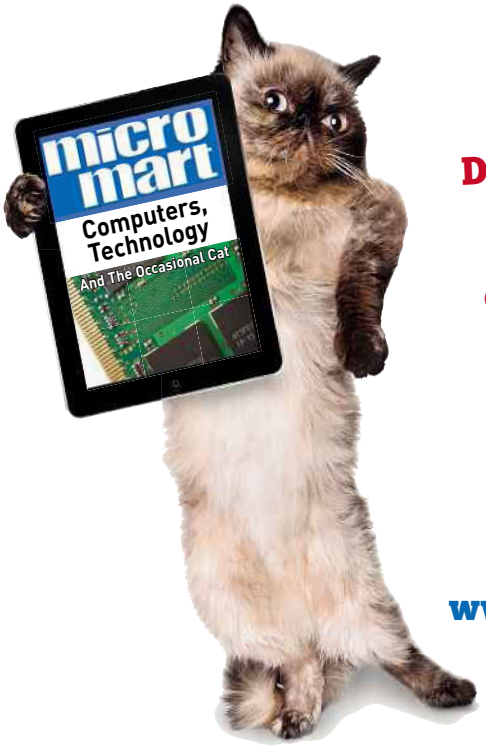

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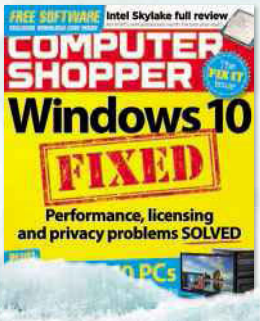

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Email: ChrisSalter@hoarelea.com
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Email: david@ewles.gb.com

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HARDWARE WANTED

Trying to breathe life back into an old machine? Why not submit a wanted ad to MicroMartClassifiedAdverts@gmail.com and see if any of the thousands of computer enthusiasts who read the magazine each week have what you're looking for?

Wanted: Instructions! A couple of long shots, but does anyone have instructions for the TEXET T581 BN programmable scientific calculator or the ZOOSTORM Fizzbook NL2 model [not the one available on the net - wrong model]? **Email: Alan Cox alancox28231@gmail.com**

WANTED: You bought a Corsair water cooler, with a square block. You fitted it to your Intel processor. You want to make a few pounds from the spare A.M.D. bits? Contact me! *Email: johnrpeel@gmail.com*

WANTED: Gigabyte GA-Z77X-D3H motherboard wanted.
Email: johnbeiry@gmail.com

WANTED: PC Tower case (beige colour if possible) to rehome an Amiga A1200 vintage computer. The Amiga motherboard is H 410mm x L 190mm (H 16" x L 7.5"). PSU not an issue but if available 250 watt more than enough. *Tel: Bill (07742) 061569 or (02641) 769503.*

WANTED: 3G dongle for Archos 80 G9 tablet.
Email: alancox28231@gmail.com

WANTED: Fractal Design Define XL full tower case. R1 (original version) in black. *Tel: (01670) 860146 Email: mm@tectron.co.uk*

SOFTWARE FOR SALE

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Adobe Photoshop Elements and Premiere Elements 12 Full Version - Windows/Mac. Original Boxed CD with unused product key. £47.50 *Tel: Ian (01932) 856971 Email: a2345@btinternet.com*

PCB design software. 127 layers, schematic entry, PCB entry, PCB to Gerber file converter, output to printer. £9.99 *Tel: Nigel Wright (07967) 527693 Email: cresswellavenue@talktalk.net*

Microsoft Office 2013. Original Software only £100. *Tel: Gordon (01314) 660205 E-mail: scobieg09@gmail.com*

Cyberlink PowerDVD 12 Standard. Runs under Windows 8, 7, Vista or XP. Original CD with unused product key £7.50 *Tel: Ian (01932) 856971 Email: a2345@btinternet.com*

Nuance Omnipage 18. OCR Runs under Windows 8, 7, Vista or XP, Original CD with unused product key £25. *Tel: Ian (01932) 856971 Email: a2345@btinternet.com*

Acronis True Image Home 2012. Bootable CD. Application runs under Windows 8, 7, Vista or XP. Original Acronis CD with unused product key £5. *Tel: Ian (01932) 856971 Email: a2345@btinternet.com*

Norton Family Premier 2.0. Runs under Windows 8, 7, Vista or XP, Original Symantec unused product key £15.
Tel: Ian (01932) 856971 Email: a2345@btinternet.com

SOFTWARE WANTED

Wanted: PictureToExe software, for making picture shows.
Tel: (01202) 610602 Email: ivor.mary@talktalk.net

Wanted: Quicken 2001. I desperately require a copy of QUICKEN 2001, UK Edition. I need to reinstall the program but have lost my original installation CD. *Email: david.maddams@icloud.com*

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We work very hard to police our classified ads, and make them as secure as possible. However, please do your bit too and use the following guidelines:

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• Be wary of anyone who insists on you paying by the above methods if in doubt, get us to check them out by mailing editorial@micromart.co.uk

• Keep copies of all correspondence

• When sending out goods, at the least obtain a certificate of posting from the Post Office

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Contact Aaron by email at:
aaron@micromart.co.uk

Please try to keep your queries brief and limit them to just one question per letter, simply so we can squeeze in as many as we can each week. Please include relevant technical information too.

Aaron

Language!

A long time Firefox user, I decided to make a change as I found the Mozilla browser was getting a little too sluggish and bloated of late. I spent a while looking around for a new program and tried out a few to see which was best. Eventually I settled on Chrome from Google, as I found it to be very similar in many ways to Firefox, but it seemed faster and had some great features.

One of my favourite features is the excellent spellcheck, which checks each and every text box. I can type in forum posts, comments and even Facebook replies and al are checked automatically, saving me fro many embarrassing typos. Very useful.

The only problem I have, however, is the language it checks in. I must have missed a setting during the install, as it seems to check using a US English dictionary and not UK, so typing 'colour; is checked to 'color.'

There must be a way to change this I assume, but one of the only things I don't like about Chrome is the menu and setting system. It's just not intuitive, at least not as easy to use as Firefox's, and I'm not really sure what to do. Can you fill me in?

Neil

Chrome is indeed an excellent browser, and as you've said, it's also very similar in many ways to Firefox, making it a natural alternative to Mozilla's offering. While you're also correct in asserting that its menu system isn't the best, it nevertheless hides a host of powerful options – one of which allows you to change the spell check dictionary to your own region.

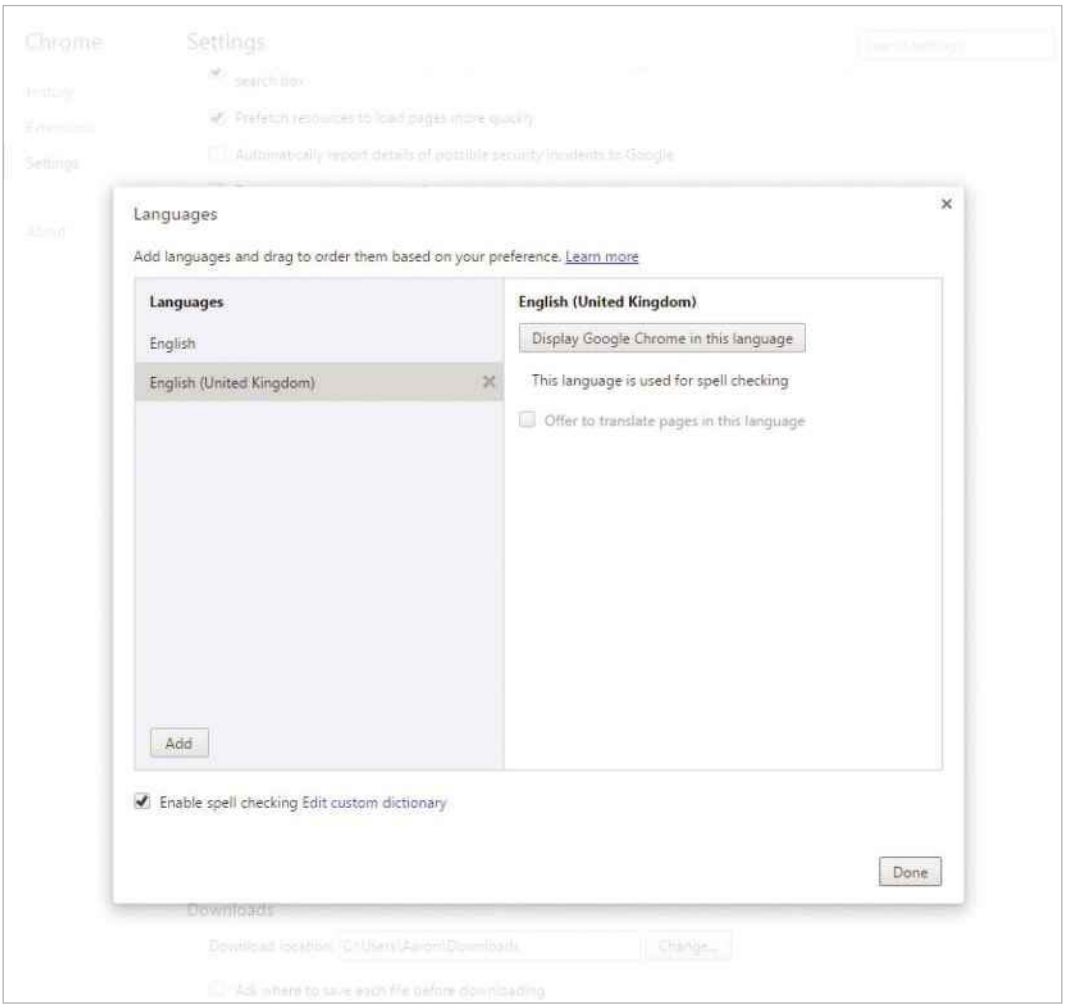
To do this, you first need to click the menu button at the top-right of the screen and go into the settings page. Next, click the link at the bottom of the list that says 'Show advanced settings...' and then browse your way down the list until you see a section for Languages.

When you hit the link for this, a new window will open that lets you add new dictionaries, on of which will be English (United Kingdom). You can also delete the US English option while you're there.

Be sure to select the option to display and check content in the UK English language and then click Done, and the job is finished.

That's all there is to it, Neil. From now on Chrome will check spelling using the UK English dictionary not the US one.

You can set Chrome's spell check dictionary within the browser's settings



Broken Oldies

I play a lot of games on my PC, including a lot of older titles. I'm a big fan of retro stuff, and being a major PC gamer, this means a lot of older PC games that have problems running on modern systems. Still, I have managed to play a lot of older games using patches and other tricks like compatibility mode.

I'm still using a combination of Windows 7 and XP, as I don't really want to upgrade to later versions of Windows. I have noticed, though, that some older games I used to be able to play no longer work. I've not tried these games for some time, but I know they've worked on my system in the past, and I've made no changes to hardware. Now these games simply don't work, and I don't know why.

There are quite a few games that no longer work, including *Anachronox*, *Age of Empires II*, *Carmageddon 2* and *Crimson Skies*. As I said, these used to work fine, but no longer load up. In one case (*Anachronox*), the game wasn't even uninstalled from the last time I played it.

I'm not running downloaded or otherwise illegitimate copies of these games, and all are the original CDs. I've applied the latest patches I have for the games, but this has made no difference. I don't understand it.

I'm hoping you can help, as I'd really like to play these games again, and I'm out of ideas. Thanks in advance.

Gareth

Although the problem with each of these games could feasibly be very different, thus making this a difficult problem to remedy without error messages and system specifications, there is one potentially common cause I can see here.

Some time ago a Windows update was released that took care of a possible security hole. This update was KB3086255 for Windows 7, and it disabled the operating system's support for third party driver, secdrv.sys. This driver is used in some copy protection software and is also the target for various security attacks, hence its deactivation by the update.

This security software is used by the games you listed, as well as a large number of others, and as is stated on Microsoft's site, a side effect of this update includes some software and games no longer functioning. Specifically:

"After you install this security update, some programs may not run. (For example, some video games may not run.) To work around this problem, you can temporarily turn on the service for the secdrv.sys driver by running certain commands or by editing the registry."

As you can see, Microsoft does say that you can remedy this by re-enabling the software via the Registry or using commands. To solve your problem, let's look at the commands you need. First, however, it goes without saying that you do this at your own risk, as enabling this software may mean your older games are playable again, but it also opens you up to a possible security breach.

If you're happy with the risk involved in doing it, here's how to enable the driver. First, open an elevated (admin) command prompt. Once open, type each of the following commands in order, pressing Return after each.

sc config secdrv start= disabled

sc config secdrv start= demand

sc config secdrv start=auto

Now, type 'sc start secdrv' and press Return. This will manually start the service, and your games should now run, assuming they ran correctly before.

To disable the driver, which I'd highly recommend you do when not playing your games, repeat the steps above, instead typing 'sc stop secdrv' and pressing Return.

As an added step, and one to make sure you're safe, I'd also disconnect from the Internet before you enable the driver. That's as long as your game doesn't need an Internet connection to work, of course. If it does, then it's just a risk you'll need to take.

Although it may incur an extra cost, albeit a small one, I'd also suggest you visit ***www.gog.com*** *and consider replacing some or all of the titles. There you'll find a huge selection of games, including a large catalogue of older titles that are made to work with modern systems. All titles are DRM-free too, so no such problems with Windows updates will be present. It may be worth a look if you'd rather keep your system as safe as possible and would rather not enable a potential security threat.*

For any other readers having the same problem with other versions of Windows, the same KB update applies. The only difference is for Windows Server 2012 R2, which is update KB3045685. If you're running this OS, though, you're not likely playing games on your computer, so it probably won't matter for games, but some older non-gaming software may be affected.

Some older games, like Ion Storm's Anachronox, use DRM that a Windows 7 update unfortunately disables

ASK JASON

Meet Jason D'Allison, a veteran of Micro Mart's panel of experts. He's here to help with any technical questions, including anything to do with tablets or smartphones, as well as PCs

Send your questions to:
Jason D'Allison
Micro Mart
Dennis Publishing
30 Cleveland Street
London
W1T 4JD

Contact Jason by email at:
jason@micromart.co.uk

While we try to cover as many questions as we can, we regret that Jason cannot answer your questions personally, but he'll cover as many as he possibly can each week. Please ask one question per letter and remember to include the full specification of your computer, including its operating system.

Jason

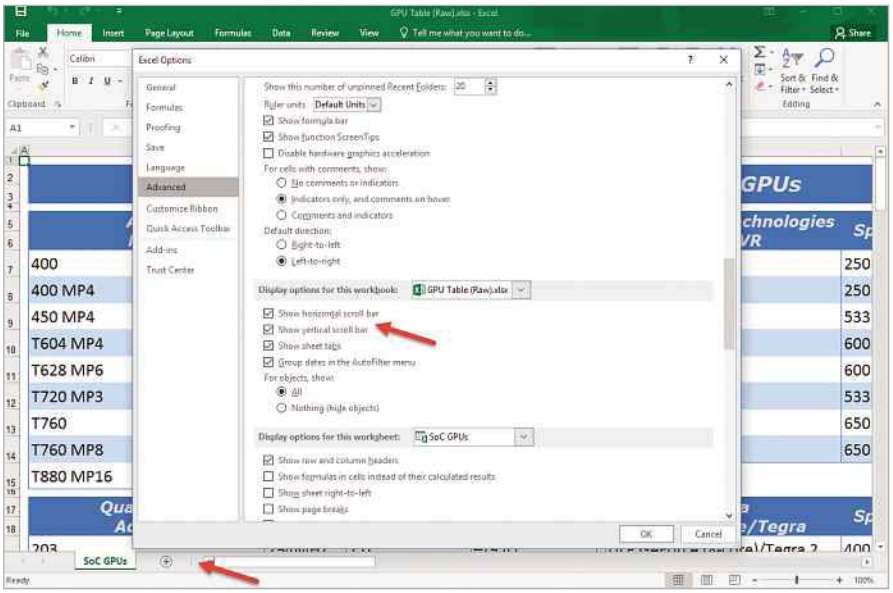
Bar Talk

I've recently switched from LibreOffice to Microsoft Office 365 (the included OneDrive storage was the clincher). I have a spreadsheet I use a lot, and in LibreOffice Calc this was saved in the .ods format. It opens okay in Excel, but I've just noticed the horizontal scroll-bar is missing. To navigate sideways, I need to use the cursor keys and move through the cells. I've just re-saved the spreadsheet in Excel's .xlsx format, but still there's no scroll-bar. How can I get it back? Is this a symptom of mixing the file types?

Jenny, Gmail

I don't think this is connected to the file's heritage, Jenny. I'm guessing one of two things has happened (or possibly both). First, click Excel's File menu and select Options. In the new window, click Advanced and look for 'Display options for this workbook'. Ensure 'Show horizontal scroll bar' is ticked. Maybe it's became accidentally unticked?

Also, it's little known that Excel's horizontal scroll-bar can be shrunk and expanded. At its left-hand edge you'll see a 'handle' comprising three vertical dots. You can drag this to resize the scroll-bar as desired, and by dragging it all the way to the right, you can make the scroll-bar completely disappear. Maybe you've moved this handle without realising? Drag it any distance to the left and you'll be sorted.



I just can't imagine why anyone would want to turn the scroll-bars off

Arc De Triomphe – Or Not

I've bought an Asus H81M-Plus motherboard and an LGA 1150 CPU to go with it. The board was recommended recently in Micro Mart. I've also bought an OCZ Arc 100 240GB SSD, another recommendation. My plan was to use the SSD as the PC's boot drive, but I've fallen at the first hurdle. The motherboard doesn't recognise it. I've played about with the UEFI settings but to no avail. Help!

John Thresher, Yahoo!

Hmm. A tricky one to answer, this. I think all you can do is run through all the usual checks. Have you tried the SSD on all four of the motherboard's SATA ports? Tried different SATA power connectors from the PSU? Tried different SATA data cables? The ultimate test would be to hook the SSD up to another PC.

If you've done all that and the SSD simply doesn't show up – you should see a dirty great icon at the bottom-left of the UEFI's home screen – I guess the only conclusion is that it's shafted. That's about the size of it, I think, John.

Note – In the past, I've been very negative about OCZ SSDs. There were too many reliability concerns, and there were also reports of financial shenanigans. My views were borne out, as the company went to the wall (2013). I should mention, for readers unaware, that the 'new' OCZ is owned by Toshiba and is a different beast entirely. I recommend its SSDs without hesitation.

With no little help from Toshiba, a phoenix rose from the ashes

Junk Science

Last week I purchased a 42" TV from a high-street retailer. I'm using this both as a TV and as a computer monitor. The man in the shop said I should replace the included HDMI cable with a more expensive one – I think it was £59 – as it was gold-plated and would improve my Sky reception and reduce ghosting. My son was with me and declined the offer, saying all HDMI cables were largely the same. I've not had any problems with reception or picture quality, so he was right. Having now looked into the matter further, it seems this sort of 'up-selling' isn't uncommon, so I hope you'll print this message as a warning to others to be on their guard.

Z. Wilmot (73), Gmail

Ah, this old chestnut. Many thanks for taking the time to write in. Your son was absolutely correct and the fellow in the shop was trying to rip you off. Shame on him. An HDMI cable will either work or it won't. The signal is digital, so it's just a stream of 0s and 1s, and these either make it from one end to the other or they don't. There's no middle ground, no scope for variance or ambiguity.

The only real consideration is whether or not the cable meets the desired technical specification. For example, any HDMI cable will carry a 1080p signal, but to carry a 4K/UHD/2160p signal, a cable needs to support at least HDMI v1.4. Any issues would become apparent more or less immediately, as you'd see artefacts – freeze-ups, chunks of scrambled picture, or periods of garbled sound. Any cable bundled with a TV will obviously be up to the standard required for that TV.

Any talk of ghosting, reception quality, or any other 'quality' is just balderdash. Not since the days of analogue TV has anyone had to worry about ghosting. Triple-layer shielding, 24-carat gold-plating, 'lifetime' warranties – snake oil, all of it.

Mind you, common weak points on cheap HDMI cables are the connectors. These have to endure a certain amount of physical stress, and it's not hard for the internal solder joints to become cracked. It's by no means guaranteed, but cables costing a little more will typically withstand a bit more rough-and-tumble. Even so – and I've said this before – if you pay more than about a fiver for an HMDI cable (cables above 1m might cost a touch more), you've been taken for a mug.

The old adage of 'buy cheap, buy twice' typically doesn't apply to HDMI cables

Fee Plea

I regularly need to send clients PayPal invoices, and I'm after an easy way to work out what fees to add on. For example, if my own charge were £25, the invoice would need to be for the amount that would leave me with that £25 after PayPal had taken its cut. It's possible to work this out manually, naturally, though the maths isn't as straightforward as it first appears. I've tried various online calculators, but they don't let me change the fee rate – they assume I'm on the standard 3.4%, but I'm actually on 2.9%. Any ideas?

Ron Marr, Buckinghamshire

I've just had a scout around and you're quite right (not that I doubted you) – most calculators don't allow the rate to be adjusted. How odd. Yes, 3.4% is PayPal's default rate, but users only have to receive £1,500.01 per month to qualify for the 2.9% rate. I say 'only' because I'd wager that most people running a full-time business would rake in that at least. Last time I looked, though, getting transferred to a lower tariff wasn't automatic. I believe users have to specifically request it. That's naughty, PayPal. Very naughty. Don't get stiffed, dear readers!*

Anyway, Ron, point your browser here: ***goo.gl/olv9LH****. This is a fee calculator hosted by Cloth Nappy Tree, which at first I assumed was one of those companies with a name not even vaguely related to its target market. Some call it cleverly abstract. I know what I call it. I'm referring to the likes of Funky Pigeon (greetings cards), Gumtree (loft clearances), and The Big Red Tomato Company (marketing strategies). Well, Cloth Nappy Tree is different – it recycles cloth nappies. I kid you not.*

*The site offers a reverse-fee calculator, and if you head to the top of the page, you *can* adjust the rate. After doing that, enter the amount you want to end up with after PayPal has creamed off its fees. Of course, all PayPal tariffs attract an additional 20p, and that's also factored in. It's this 20p that kills sellers of low-cost items. 2.9% of 99p is neither here nor there, but add that 20p into the mix and nearly a quarter of the revenue disappears. And if eBay's your outlet, you get crucified there too.*

** At £6,000.01, the rate drops to 2.4%, and at £15,000.01, it drops to 1.9%. After £55,000.00, it seems to get all top secret and you have to speak to one of PayPal's bigwigs.*

Whilst you're working out your fees, apparently you can also recycle your nappies

Crowdfunding Corner

Sometimes we pick projects to highlight that are obvious successes in the making. This week, we're looking at a couple of ideas that are more intriguing and perhaps a little more risky in terms of whether they'll actually work or not. But neither is particularly expensive, so maybe it's worth taking the chance. You'll have to decide for yourself!

AnyStreaming

The AnyStreaming product is a real-time wireless HDMI device that can be controlled over USB or using an IR remote, allowing you to connect to any smart screen so your signal can effectively follow you around the house.

To use AnyStreaming, simply connect the HDMI devices you want to rebroadcast to it using a standard cable, and then download the related app on your phone, tablet, smart TV or PC. You'll be able to receive the signal over your wireless connection in resolutions up to 1080p, so if you want to watch TV without switching off your game, you can simply switch to AnyStreaming and continue playing.

The standard price for a single device is $99 (£65), but cheaper tiers are available if you get in early. At best, you can save $50 (£33) off the projected retail price, and more if you buy it in bulk. We're a little wary of the project (the poor English translation of its Kickstarter page gives it the feel of an organisation that doesn't worry too much about the fine details), but it looks interesting and there seems to be confidence in the idea from plenty of existing backers. Its $50,000 (£33,000) goal certainly seems reachable, and if the product goes to plan it'll be shipping in July 2016.

URL: kck.st/1HtrfGS
Funding Ends: Wednesday, 9th December 2015

Aerion Mouse

Do you yearn for a mouse that's nothing like the existing ones? Well, here's your chance to try exactly that. The Aerion Mouse fits between the fingers of your hand and responds to small movements using its internal gyroscope and laser tracking system. Designed for efficiency and comfort, you don't even have to click to activate the button functions: just tilt left or right.

The full device comes with a charge dock and internal battery, and it's about a million miles away from any input device you've ever used. It's designed by the same company that previously created a successful Arduino project on Kickstarter, so it has form in bringing products to market – always a good thing when you're taking a risk on something radical.

The company, LCI Tech, is aiming to make a 6,000 (£4,200) goal, and with more than a month left, it's hit two thirds of that target. It's virtually guaranteed that it'll finish it off. The early bird tiers have almost entirely run out, but you can still pick one up for 45 (£32) or with a laser pointer and charge dock for 65 (£46). We're not entirely sure what to make of it, but why not see for yourself?

URL: kck.st/1kw3kBf
Funding Ends: Tuesday, 8th December 2015

Disclaimer: Images shown may be prototypes and Micro Mart does not formally endorse or guarantee any of the projects listed. Back them at your own risk!

App Of The Week

Ford Meople.Connector

David Hayward checks out an in-car app this week

For those of you who drive a new Ford car, a handy new app has recently been launched that is designed to help you keep up to date with all your social media contacts, while still being safe behind the wheel.

It's a common thing in modern society now, that a driver can keep in contact with their friends and family via social media. Of course, when you're behind the wheel, your full attention should always be on the road and the car, but since there are many drivers who seem to think that they can get away with being on the phone while driving, Ford has introduced a safer alternative.

Keep In Touch With Meople

The app is called Meople.Connect, and it utilises the already present Ford SYNC AppLink technology to bridge the gap between the in-car technology and what you receive on your social media apps.

It's remarkably simple, in that the Meople.Connect app will connect with your car and exchange data with your various social media profiles and accounts. Because it uses the Ford SYNC abilities, it can read out aloud any new posts or messages from the likes of LinkedIn or Twitter via the car stereo.

As well as being able to read out a message, the app is also voice controlled, as per the usual Ford SYNC capabilities. This means you can say 'read', 'answer', 'skip' and so on when a message comes through. And with a little configuration first, you can respond to the messages coming in through a pre-setup stage that will form a reply message while you're driving.

Like it or not, social media is a huge part of a lot of people's lives. Although personally we don't check our messages while driving (we used the Ford SYNC to read out any incoming texts), those who live and work by their social media presence have a real need to respond. This new integration of the app and Ford SYNC makes the whole process significantly safer for the driver and everyone else around them.

Small steps

For the moment, the Ford integration of Meople.Connect only works with Twitter, LinkedIn and, oddly, VK, a Russian social media network.

However, with ample funding and time, there will inevitably be more social networks introduced, including Facebook and the like. You can, though, keep your contacts informed of your current location, which we think is handy enough for those long car journeys to new destinations.

Features At A Glance

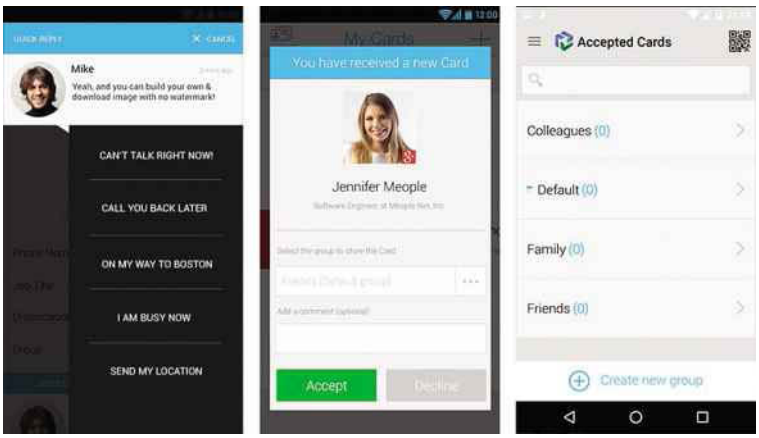
- Stay in contact with your social media connections.
- Voice-activated commands via Ford SYNC.
- Total hands-free to keep you up to date.
- Share your location and current status.

Conclusion

It's an interesting app and one that we can see forming in the future to be an integral part of the in-car technology of the next generation.

It may not be everyone's cup of tea, but it'll appeal to a good chunk of the driving population and it's a part of modern life.

The Ford SYNC AppLink technology integrates with Meople.Connector seamlessly



You can get all your updates and respond with voice commands

Logging Off

If you don't follow the vagaries of the film box office, then I can confirm that Bond's latest outing *Spectre* is a huge hit. And, based on greater evidence, Universal Picture's Steve Jobs biopic most certainly isn't.

In the first weekend of general release in the US, it garnered a depressingly feeble $7.1m through 2,493 cinemas, or just $2,850 per theatre. If you accept an average ticket price of about $8.50, that's about 335 people over at least nine screenings, or 37 in each showing.

For a movie that was generally well received by reviewers, that's an unambiguous rebuff, and strongly hints that regardless of the great acting skills of Michael Fassbender and directing of Danny Boyle, the mythos of Jobs has exceeded its sell-by date. But then to my counting this is at least the fourth movie made about or including the man, and it's just two years since the last one, *Jobs*.

What those who green-lit this latest production seemed not to grasp is that while Steve Jobs will always remain a symbol of progressive thinking in a regimented world to technophiles, he was just another ill-mannered rich guy to most other people. And we've plenty of those to pour scorn on, should we want to.

For those remotely interested, Jobs and Pickavance once met, very briefly in the 80s. It was at a computer fair in London, where I think he was promoting the Apple IIe along with the Macintosh.

He was going somewhere quickly. I was in his way. Hilarity didn't ensue. Not that it's connected, but within months Jobs would resign from Apple and go on the NeXT computer adventure, and I'd do something less meteoric or well publicised.

He was the obsessive who actually managed to turn his affliction into a massively profitable company on the second attempt, and he's now revered as a visionary, though lots of people have painted Jobs in various shades from black to white, either as a missionary in a land of rigid thinking or a hypocrite with zero man management skills. But whichever version of his life you accept as being real or even close, he was a very flawed human and not a digital messiah.

What's fascinating to me is that the latest film has been criticised for pushing an agenda, yet it's based on a book that he personally approved as being representative of his life. And Tim Cook decried

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it as being inaccurate, without actually bothering to see it, oddly.

Conversely, Steve Wozniak consulted on the film and contributed events to the script, and surely he'd be the best placed person to do that?

Yet this succession of books and films doesn't actually bring us any closer to understanding what really drove Jobs or the thought processes in his head. In the same way, I can say I 'met' him, but the reality is that I didn't in any kind of meaningful way.

Perhaps it's time for us all to move on and just accept that Jobs was probably a one-of-a-kind thinker and that he changed computing in many subtle ways that have outlived him.

Given the lack of audience for a movie about him, the general public certainly has, and there are those on the board of Apple Inc. now who really want to leave that legacy behind them.

Mark Pickavance

LAST WEEK'S CROSSWORD

Across: **7** Joseph Fourier **8** Exceed **9** Revise **10** Celsius **12** Probe **14** FETCH **16** Whimsey **19** Stream **20** Ramify **22** Queen's Counsel.

Down: **1** Hoax **2** Levels **3** Rhodium **4** Hoard **5** Driver **6** Sensible **11** Electrum **13** Thermos **15** Clever **17** Moment **18** Smash **21** Flex.

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Considering we live in a country that's known for being wet and cold, it's odd how every single year, winter still comes as something of a surprise. Yes, we know it's normal for it to be chilly this time of year, and for it to be dark when wake up in the morning. And modern science even explains why this is the case. Yet when your alarm clock is going off and it's time to get ready for work, every inch of your body, mind and soul screams at you to stay in bed. Surely it's not just us who think that going against this urge is an entirely unnatural state of affairs? But that's exactly what we do, dragging ourselves out from under the nice, comfy warmth of our duvets and into the harsh, unforgiving morning air. It's just not right, which is why we're thinking about starting an online petition to do something about it. We're not exactly sure what the solution is going to be, but who doesn't like a good online petition? True, they pretty much get ignored 90% of the time, but they look on Twitter on Facebook for a couple of days, until people get bored and move on to something else. But we're not that fickle. No, we're sticking with this one. Actually, on second thoughts, forget it. We're just going to hit snooze a few times.

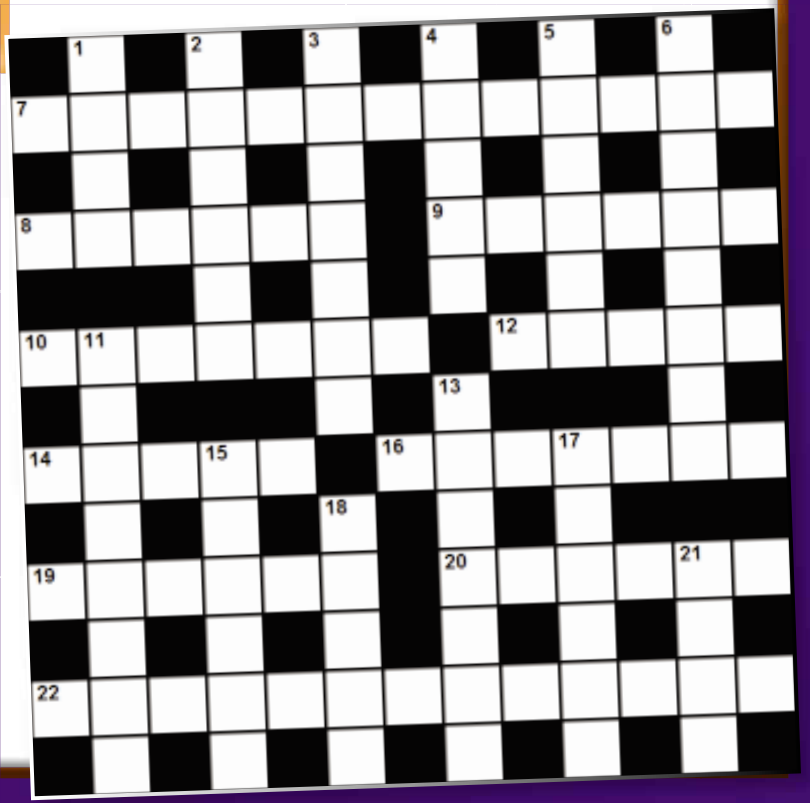
THIS WEEK'S CROSSWORD

Across

7 The equinoctial point that lies in the constellation of Pisces. (6,7)
8 An intermediate electrode that emits additional electrons in a photomultiplier or similar electronic amplifying device. (6)
9 The American space programme for landing astronauts on the moon. (6)
10 A metal mounting for the circuit components of an electronic device. (7)
12 An illusory feat considered magical by naive observers. (5)
14 The BBC's flagship technology programme. (5)
16 Apple's processor of choice from 1994 to 2006 before its transition to Intel. (5,2)
19 Online version of ESPN's action sports network covering skateboarding, snowboarding, surfing, etc. (1,5)
20 Mumbai-based ISO 9001:2008 certified company providing office automation, biometric and surveillance systems. (6)
22 GCHQ's primary function? (13)

Down

1 Refuse request or access. (4)
2 Spies. (6)
3 .dz TLD (7)
4 A small group of people assigned to a particular task. (5)
5 The quality of being extremely thorough and careful. (6)
6 A size of paper, about 330 × 200 or 400 mm. (8)
11 Yuri Denisyuk made the first one in 1962. (8)
13 The line at which the earth's surface and the sky appear to meet. (7)
15 Force or oblige someone to do something. (6)
17 A ZX Spectrum videogame developed and released by New Generation Software in 1982. (6)
18 An incidental remark or one not intended to be heard by everyone present. (5)
21 A freeware, text-based email client originally developed at the University of Washington in 1989. (4)



In Next Week's Micro Mart*

- Hands on with Intel's latest processors
- What's new in Raspian's recent update?
- How will Microsoft's changes to OneDrive affect you?
- Plus the usual mix of news, reviews and advice

* May be subject to change

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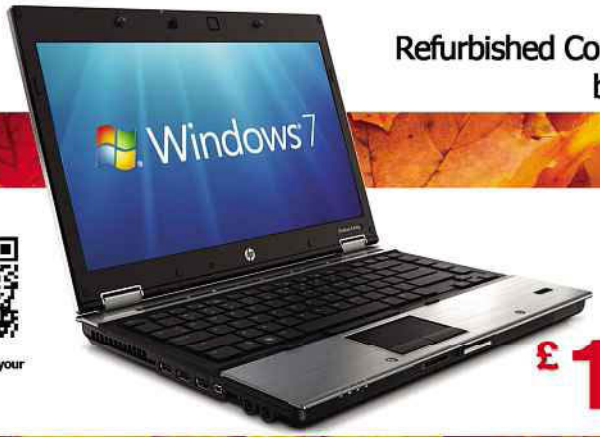

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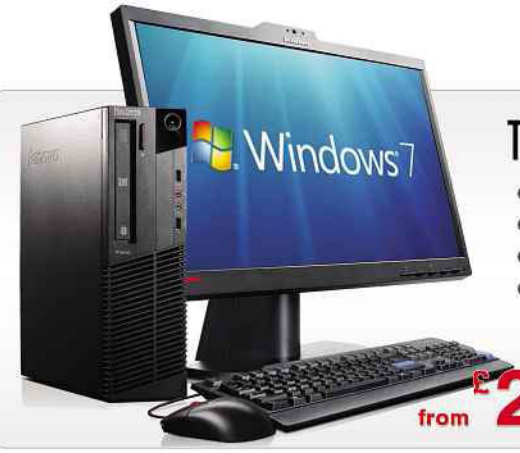

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